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HISTORICAL SKETCH

OF THE

AMERICAN SOCIETY

OF

CIVIL ENGINEERS



1852-1907

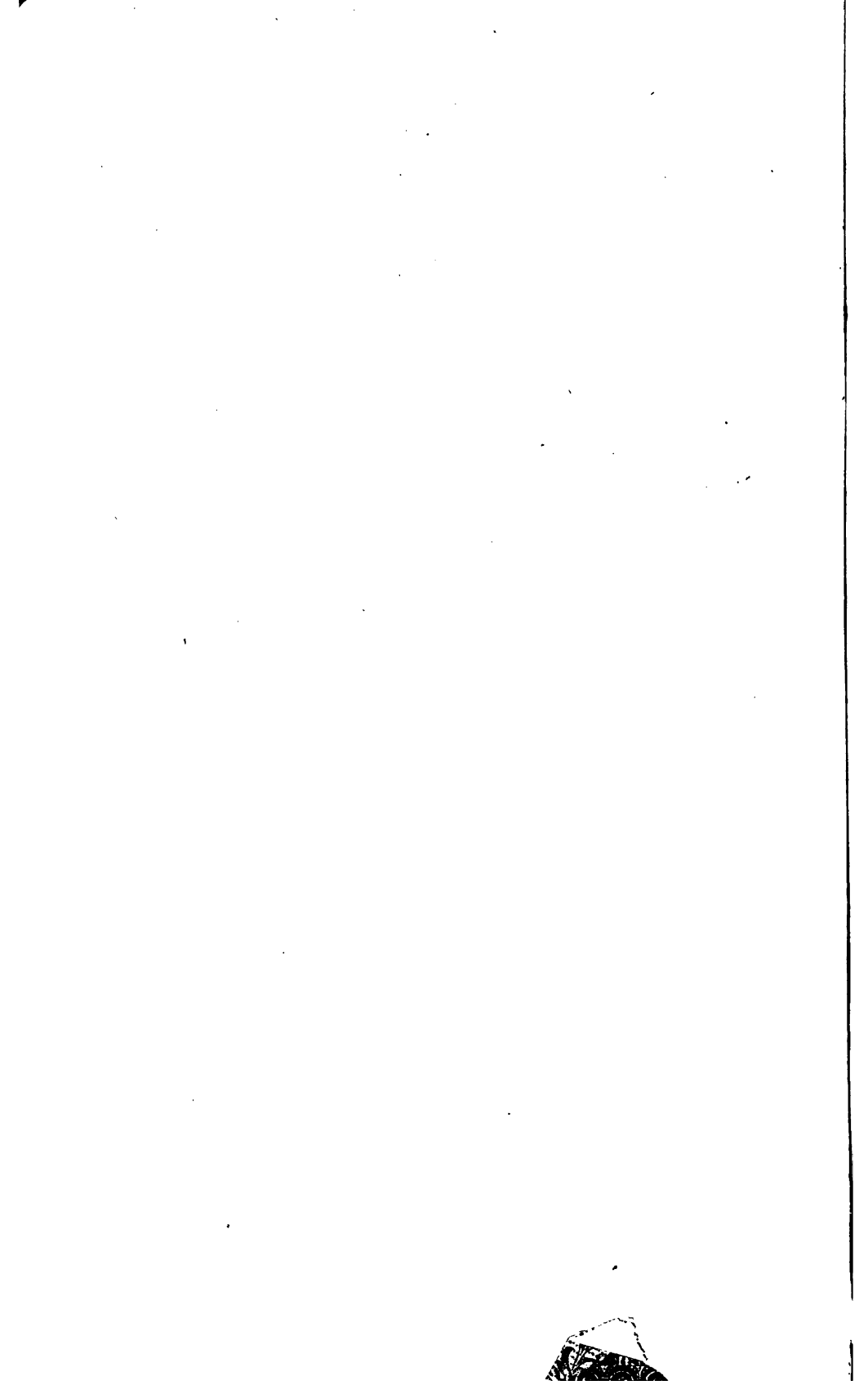
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HISTORICAL SKETCH
OF THE
American Society of Civil Engineers,
1852-1897.

PRINTED BY ORDER OF THE
BOARD OF DIRECTION.

HISTORICAL SKETCH
OF THE
AMERICAN SOCIETY
OF
CIVIL ENGINEERS

BY
CHARLES WARREN HUNT
M. Am. Soc. C. E.

NEW YORK
1897

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ILLUSTRATIONS.

	PAGE
JAMES LAURIE*	17
President, November 5th, 1852, to November 6th, 1867.	
JAMES P. KIRKWOOD*	19
President, November 6th, 1867, to August 5th, 1868.	
WILLIAM JARVIS McALPINE*	21
President, August 5th, 1868, to November 3d, 1869.	
ALFRED WINGATE CRAVEN*	23
President, November 3d, 1869, to November 1st, 1871.	
HORATIO ALLEN*	25
President, November 1st, 1871, to November 5th, 1873.	
JULIUS WALKER ADAMS.	27
President, November 5th, 1873, to November 3d, 1875.	
GEORGE SEARS GREENE	29
President, November 3d, 1875, to November 7th, 1877.	
ELLIS SYLVESTER CHESBROUGH*	31
President, November 7th, 1877, to November 6th, 1878.	
WILLIAM MILNOR ROBERTS*	33
President, November 6th, 1878, to November 5th, 1879.	
ALBERT FINK	35
President, November 5th, 1879, to November 3d, 1880.	
JAMES BICHENO FRANCIS*	37
President, November 3d, 1880, to January 18th, 1882.	
ASHBEL WELCH*	39
President, January 18th, 1882, to September 25th, 1882.	
CHARLES PAINE	41
President, January 17th, 1883, to January 16th, 1884.	
DON J. WHITTEMORE.	43
President, January 16th, 1884, to January 21st, 1885.	
FREDERIC GRAFF*	45
President, January 21st, 1885, to January 20th, 1886.	
HENRY FLAD	47
President, January 20th, 1886, to January 19th, 1887.	
WILLIAM EZRA WORTHEN	49
President, January 19th, 1887, to January 18th, 1888.	
THOMAS COLTRIN KEEFER	51
President, January 18th, 1888, to January 16th, 1889.	

* Deceased.

	PAGE
MAX JOSEPH BECKER*.....	53
President, January 16th, 1889, to January 15th, 1890.	
WILLIAM POWELL SHINN*.....	55
President, January 15th, 1890, to January 21st, 1891.	
OCTAVE CHANUTE.....	57
President, January 21st, 1891, to January 20th, 1892.	
MENDES COHEN.....	59
President, January 20th, 1892, to January 18th, 1893.	
WILLIAM METCALF.....	61
President, January 18th, 1893, to January 17th, 1894.	
WILLIAM PRICE CRAIGHILL.....	63
President, January 17th, 1894, to January 16th, 1895.	
GEORGE SHATTUCK MORISON.....	65
President, January 16th, 1895, to January 15th, 1896.	
THOMAS CURTIS CLARKE.....	67
President, January 15th, 1896, to January 20th, 1897.	
JAMES OTIS MORSE*.....	69
Secretary, December 1st, 1854, to November 3d, 1869.	
Treasurer, December 1st, 1854, to November 3d, 1875.	
ALFRED PANCOAST BOLLER.....	71
Secretary, January 5th, 1870, to November 1st, 1871.	
GABRIEL LEVERICH.....	73
Secretary, November 1st, 1871, to November 7th, 1877.	
JOHN BOGART.....	75
Secretary, November 7th, 1877, to January 21st, 1891.	
Treasurer, November 3d, 1875, to November 7th, 1877; and January 21st, 1891, to January 16th, 1895.	
FRANCIS COLLINGWOOD.....	77
Secretary, January 21st, 1891, to February 5th, 1895.	
CHARLES WARREN HUNT.....	79
Secretary, February 5th, 1895.	
J. JAMES ROBERTSON CROES.....	81
Treasurer, November 7th, 1877, to January 18th, 1888.	
GEORGE SEARS GREENE, JR.....	83
Treasurer, January 18th, 1888, to January 21st, 1891.	
JOHN THOMSON.....	85
Treasurer, January 16th, 1895.	
DIAGRAM OF RELATIVE GROWTH OF ENGINEERING SOCIETIES.....	91

* Deceased.

INTRODUCTION.

Apart from the fact that it was founded in 1852, the early history of the American Society of Civil Engineers is known to comparatively few, and in the minds of a large majority of its members there exists but a hazy idea of its birth and early infancy. The number is rapidly diminishing, also, of those who, taking charge of the fifteen-year-old stripling, by patient, watchful and disinterested care, overcame the perils incident to this stage of its life; restraining, when necessary, the ardor of youth; building up the system with the tonic of professional *esprit de corps*; and warding off that strange disease, sectional jealousy, so often fatal to bodies of this nature. Their conservative diagnosis of, and courageous application of the proper remedy for, each attack induced by the introduction of some element foreign to its nature, finally brought it to a well-developed stage, thoroughly equipped for the accomplishment of the results aimed at it by its founders.

So far as is known, nothing has ever been published giving in detail the steps of this growth up to 1873, the available written records being fragmentary and in many instances meager, and the writer has thought the present

time, when the Society is erecting a house exclusively for its use, propitious for presenting, as nearly as may be, a consecutive historical sketch derived from all available sources.

Since 1873 the records are accessible in "Proceedings," but as these cover twenty-two volumes, they are not available, except by much reading. It is therefore hoped that the account here presented, without further comment than seems necessary to make the recital connected and continuous, may not be found devoid of interest.

The illustrations have been secured with some difficulty. Many of them are taken from old-time photographs of various sizes and degrees of excellence. That they, as reproduced, present a certain amount of uniformity is due to the recent remarkable advances in the art of photo-engraving. The writer regrets that no portraits of the late Robert B. Gorsuch and Edward Gardiner, who served as Secretaries during the first and second years of the Society's life respectively, can be found. He has also been unable to secure one of Thomas C. Meyer, M. Am. Soc. C. E., who occupied that office from November 3d, 1869, to January 5th, 1870.

C. W. H.

JANUARY 1ST, 1897.

HISTORICAL SKETCH OF THE American Society of Civil Engineers

FIRST MOVEMENT TO FORM A NATIONAL SOCIETY.

The earliest effort to form an association of the civil engineers of America was started by a call from a "highly respectable meeting of the profession," held in Augusta, Ga. It is to be regretted that no record of this meeting or of those who attended it can be found, but, in response to its appeal, a convention of civil engineers of the United States was held at Barnum's Hotel, Baltimore, on Monday, February 11th, 1839, and, upon the invitation of the Maryland Academy of Science and Literature, adjourned to meet the next day in the hall of that organization. Forty gentlemen from the States of Massachusetts, New York, New Jersey, Pennsylvania, Illinois, Maryland, Virginia, Missouri, North Carolina, Georgia and Louisiana were present. Benjamin H. Latrobe, of Baltimore, was elected President, and J. F. Houston, of

*Meeting in
Baltimore,
Feb. 11, 1839.*

Pennsylvania, was appointed Secretary. After much discussion a committee of seventeen was appointed, so selected that all "different portions of the Union may be represented so far as is practicable," and definite instructions were given it to prepare and adopt a constitution and form a society of civil engineers of the United States. This committee was to meet in the hall of the Franklin Institute of Philadelphia, which institution had offered to do everything possible to forward the scheme. After the appointment of a committee of five to draft an address to the civil engineers of this country, the meeting adjourned.

The Committee of Seventeen consisted of :

BENJAMIN WRIGHT, of New York.
WM. S. CAMPBELL, of Florida.
CLAUDE CROZET, of Virginia.
WM. C. FAIRFAX, of Virginia.
C. B. FISK, of Maryland.
EDWARD F. GAY, of Pennsylvania.
WALTER GWYNN, of North Carolina.
J. B. JERVIS, of New York.
JONATHAN KNIGHT, of Maryland.
BENJAMIN H. LATROBE, of Maryland.
W. G. MCNEILL, of South Carolina.
EDWARD MILLER, of Pennsylvania.

MONCURE ROBINSON, of Virginia.

J. EDGAR THOMSON, of Georgia.

ISAAC TRIMBLE, of Maryland.

SYLVESTER WELCH, of Kentucky.

G. W. WHISTLER, of Connecticut.

In March the Committee of Five before mentioned adopted an address on the subject of the proposed Society, in which attention is called to the "gratifying degree *Address to* of unanimity" which characterized *the Profession* the Convention, and to the "multi- *in America,* *1839.* tude of instructive examples" in America of engineering efforts to obtain "the greatest amount of useful effect at the smallest cost," and their usefulness to the engineer if correct information in regard to them could be collated. The great success which had attended the labors of the British Institution, and the different conditions existing in this country on account of public improvements being so widely spread and difficult of access, as well as the difficulty of meeting at any one point on account of the time and expense involved, are also mentioned. The address closes with this quotation from the inaugural address of Thomas Telford, the first President of the British Institution, which the Committee deemed "peculiarly appropriate."

"In foreign countries, similar establishments are instituted by government, and their members and proceedings are under its control; but here, a different course being adopted, it becomes incumbent on each individual member to feel that the very existence and prosperity of the Institution depend in no small degree on his personal conduct and exertions, and the merely mentioning the circumstance will, I am convinced, be sufficient to command the best efforts of the present and future members, always keeping in mind that talents and respectability are preferable to numbers, and that from too easy and promiscuous admission, unavoidable, and not infrequently incurable, inconveniences perplex most societies."

At a meeting of the Committee of Seventeen held at the Franklin Institute, Philadelphia, in April, 1839, there was but a small attendance. A draft of a proposed constitution was drawn up, and, with a recommendation that it be adopted, was sent to the remaining members of the Committee.

This Constitution is interesting in that the name selected for the association was identical with that under which we are now incorporated, and that architects and eminent machinists were to be admitted only as Associates. The

only provisions as to location were that one session must be held annually in Philadelphia and that the Treasurer was to be a resident of that city. It should also be noticed that its framers recognized one of the difficulties with which the proposed society would have to contend, for every Member and Associate was to be required "to produce to the Society at least one unpublished communication in each year, or present a scientific book, map, plan or model, not already in the possession of the Society, under penalty of \$10."

*Proposed
Constitution,
1839.*

This Constitution failed to receive the sanction of a majority of the Committee, only seven votes being rendered in favor of it; and in the pages of the *American Railroad Journal* for February, 1840, will be found a communication from Mr. Edward Miller, Secretary of the Committee of Seventeen, completing the history of this attempt to establish a society. In his opinion the causes of failure were the appointment of a large committee, which, though democratic, was not likely to produce harmony in council, and, to use his own words, "when to this is superadded the facts that most of those appointed were ignorant of their appointment,

several absolutely indifferent or hostile to the formation of any institution ; that many were unknown to each other, and so scattered as to render a meeting difficult," he concludes that "under these conditions there can hardly be a necessity of pointing out the local views, partialities and jealousies which influenced in some measure the result."

After stating that jealousy and discontent must result from the necessity of vesting the management in a few who must reside near the point at which the society's hall is located, and his belief that the formation of four independ-

***Four
Independent
Societies
Suggested.***

ent societies, to have their points of meetings in different portions of the Union, and their sessions at different seasons of the year, the certificate of any one of which should entitle the holder to participate in the proceedings and privileges of the others, would overcome this difficulty, he suggests as a convenient division of the Union the following :

1. New York and New England.
2. Pennsylvania, New Jersey, Maryland, Delaware and Virginia.
3. All the States south of Kentucky and Virginia.

4. Kentucky and the Northwestern States.

So far as is known, this suggestion was never acted upon, and thus ended what promised at first to be a successful effort to bring the members of the profession into closer touch. During the next twelve years a few appeals for action were published in the technical press, but nothing definite was accomplished toward the formation of a society of civil engineers other than local until 1852.

Whether Mr. Miller's opinion of the cause of this failure is correct or not is difficult to determine. There can be no question of the truly representative character, both professionally and personally, of the gentlemen appointed on the Committee, and the fact that they differed so widely in their views as to the practicability and advisability of the movement, as well as to the manner in which it should be undertaken, leads to the belief that the time was not ripe for the formation of such an association in the United States, which belief is strengthened by the failure of our own Society to interest many of the prominent engineers of the country during the first fifteen years of its existence.

**FORMATION OF THE AMERICAN SOCIETY OF
CIVIL ENGINEERS AND ARCHITECTS.**

The issue of the following circular, which was sent by several members of the profession to their professional brethren in the city of New York and vicinity was the initial step resulting in the formation of our Society:

"NEW YORK, October 23d, 1852.

"DEAR SIR :

"A meeting will be held at the office of the Croton Aqueduct Department, Rotunda Park, on Friday, November 5th, at 7 o'clock P.M., for the purpose of making arrangements for the organization, in the city of New York, of a Society of Civil Engineers and Architects.

"Should the object of the meeting obtain your approval, you are respectfully invited to attend.

"WM. H. MORELL, WM. H. SIDELL,

"J. W. ADAMS, A. W. CRAVEN,

"JAMES LAURIE, JAMES P. KIRKWOOD,
and others."

Agreeably to this call, Messrs. Julius W. Adams, James Laurie, Thomas A. Emmet, J. W.

Ayres, Edward Gardiner, Robert

First Meeting,
Nov. 5, 1852. B. Gorsuch, W. H. Morell, W. H. Sidell and Alfred W. Craven, of

New York; G. S. Greene, of Albany; S. S. Post, of Owego, and W. H. Talcott, of New Jersey, were present at the office of Alfred W.





JAMES LAURIE.

Craven, Chief Engineer of the Croton Aqueduct Department, Rotunda Park, at the hour mentioned. This office was located in what is now City Hall Park, facing Chambers Street, near Centre Street.

Mr. Craven presided. It was resolved that an association be incorporated under the name of the American Society of Civil Engineers and Architects. A committee, consisting of Messrs. Laurie, Adams and Sidell, appointed for the purpose, retired, and, after a short absence, presented a draft of a Constitution and By-Laws. The Constitution was taken up by sections, discussed, amended and ***Constitution Adopted.*** adopted, and this Constitution remained in operation without change until 1868. It provided that the permanent place for the transaction of the business of the Society should be in the city of New York, for one grade of membership only, to which were eligible "Civil, Geological, Mining and Mechanical Engineers, Architects and other persons who, by profession, are interested in the advancement of science," and that candidates for membership must be proposed by two Members of the Society at any regular meeting, their names posted "in some conspicuous place" in

the Society rooms for thirty days, and that the ballots of two-thirds of those present at any regular meeting should be necessary for election, three negative ballots excluding. The entrance fee was fixed at \$10.00. Members were divided into Residents and Non-Residents, and the annual dues of the former fixed at \$10.00, and of the latter at \$5.00. Officers were elected

***First
Officers
Elected.***

as follows: President, James Laurie; Vice-Presidents, Edward Gardiner and Charles W. Copeland; Directors, Wm. H. Morell, Wm. H. Sidell, J. W. Adams, J. P. Kirkwood and A. W. Craven; Secretary and Treasurer, Robert B. Gorsuch.

An address to be sent to those engineers and architects of the United States considered by the Board of Direction eligible for membership was adopted, and, as clearly setting forth the views of the incorporators, is here reproduced :

**“ROOMS OF THE AMERICAN SOCIETY OF CIVIL
ENGINEERS AND ARCHITECTS,**

NEW YORK, November 10th, 1852.

“It has been for some time under advisement to form in the city of New York a Society of Civil Engineers, embracing also the kindred professions, with a view to their mutual im-



JAMES P. KIRKWOOD.

provement and the public good. Accordingly a meeting was called on the evening of the 5th of November of such professional men as were accessible and were supposed to be favorably inclined to such an association. The objects of the contemplated Society were laid before this meeting, as also the means by which it was proposed to accomplish the end in view. A Constitution was drawn up, discussed in detail, and finally, after much labor, approved and accepted as the basis for the government of the 'American Society of Civil Engineers and Architects.' Officers were elected in accordance with the provisions of the Constitution, and the Society was duly organized.

***Address to
Proposed
Charter
Members.***

"It becomes our duty, in conformity to a resolution of said Society, to address such members of the respective professions as are known to us throughout the country, and, laying before them in brief the result of their deliberation, invite them to co-operate in a furtherance of the aim and objects of the Society, so far as they may be found to accord with their individual views. Such gentlemen only as receive this circular are eligible as members of the Society by a bare notice of their desire to become such and a compliance with the accompanying forms (on or before December 1st, 1852). All others will be elected by ballot in conformity with the requirements of the Constitution.

"It will be admitted that no point in our country offers the facilities for rendering such a society of practical benefit to the public as well as to its own members as the city of New York, and so long as this city retains its present commercial importance, so long it will be a center around and within which there will accumulate by a natural law practical commercial and professional information not elsewhere to be sought, and which, embodying the elements of successful enterprise, may be regarded as a fund of valuable data, equally valuable to the man of science and to the political economist. Much of this information is, from its nature, unwritten, but is entirely accessible, and, under the auspices of a society formed for that purpose, could be rendered available to such members as may desire the benefit of it.

"The Constitution of the Society declares that it has for its object:

"The professional improvement of its members, the encouragement of social intercourse among men of practical science, the advancement of engineering in its several branches, and of architecture, and the establishment of a central point of reference and union for its members.

"Among the means to be employed for attaining these ends shall be periodical meetings for the reading of professional papers, and the discussion of scientific subjects, the foundation of a library, the collection of maps, drawings and





WILLIAM JARVIS McALPINE.

models, and the publication of such parts of the proceedings as may be deemed expedient.

"Civil, geological, mining and mechanical engineers, architects and other persons who, by profession, are interested in the advancement of science, shall be eligible as members.

"It is anticipated that the union of the three branches of civil and mechanical engineering and architecture will be attended by the happiest results, not with a view to the fusion of the three professions in one; but as in our country, from necessity, a member of one profession is liable at times to be called upon to practice to a greater or less extent in the others, and as the line between them cannot be drawn with precision, it behooves each, if possible, to be grounded in the practice of the others; and the bond of union established by membership in the same Society, seeking the same end, and by the same means, will, it is hoped, do much to quiet the unworthy jealousies which have tended to diminish the usefulness of distinct societies formed heretofore by the several professions for their individual benefit.

"It will be seen that we contemplate the formation of a library, and the collection of plans, models, etc., not only of works completed, but of works while under construction, many of which of great practical value would never see the light but for some such combined effort on the part of the profession. And to enable such members of the Society as reside at a dis-

tance to aid in the general cause, communications from them on professional subjects are solicited, to be read at the stated meetings of the Society and placed on its files, and also to extend the benefit of the Society to the same class of members, all information of a professional character in the possession of the Society, will, at all times, be open to its members for examination and use. Thus, the benefits of our library and collection of plans, drawings, etc., will be brought within reach of such as are debarred, by reason of professional engagements, or distance, from joining in our periodical meetings or making research into our archives.

"It is scarcely necessary in this place, even did space permit, to enlarge on the many advantages which may be anticipated to flow from the judicious management of such a society as the one we have organized.

"In the formation of a constitution for our Society it has been the endeavor, so far as possible, to profit by the experience of similar societies which have preceded us in the same field, and we may be permitted to hope, that in framing that paper, we have succeeded in embodying those features from among them best calculated to ensure the result at which we aim.

"In reference to the revenue of the Society, it has been considered, that as members not residing in this city will, or may, under the arrange-



ALFRED WINGATE CRAVEN.

the building then being erected by him for the use of mechanical, scientific and other associations, but nothing further is on record in regard to the matter.

In the first Annual Report of the Board of Direction, October 10th, 1853, the total membership is stated as, Honorary *First Annual Report.* Members, 6; Corresponding Member, 1; Members, 48; total receipts, \$700; expenditures, \$115.22. The following quotations may be of interest:

“In view of the limited number of resident members, and the uncertainty whether it would be practicable to establish the Society on a basis that would be attended with beneficial results, the policy of the Board during the past year has been to husband the resources of the Society, to make no expenditures that could well be avoided, so that in case of failure the funds collected might be returned to the members.

“For these reasons no steps have been taken towards the formation of a library, or for renting rooms for the use of the Society.

“The Board regret that they cannot speak in more flattering terms of the success of the Society, or with more confidence of its future prospects, but, believing that such an institution is much wanted, and that it rests with and is entirely within the power of those eligible as

members to make it eminently useful, they recommend that the organization be kept up, and that renewed efforts be made to obtain additional members who are residents of the city or vicinity, and can attend the meetings. And, meanwhile, that the same course of policy with respect to the funds of the Society as indicated above be continued."

An alphabetical list of the membership referred to in this report is given below. It is impossible to say just how many of these be-

came Members on receipt of the
List of Char- circular given on page 18, and
ter Members.

therefore the men here named
 may all be considered as Charter Members.

HONORARY MEMBERS.

JOHN JAMES ABERT,	DENNIS HART MAHAN,
ALEXANDER DALLAS BACHE,	MONCURE ROBINSON,
HENRY BURDEN,	JOSEPH G. TOTTEN.

CORRESPONDING MEMBER.

T. S. BROWN.

MEMBERS.

JULIUS WALKER ADAMS,	THEODORE D. JUDAH,
JAMES BARNES,	ARCHIBALD W. KENNEDY,
E. L. BERTHOUD,	JAMES P. KIRKWOOD,
ROBERT N. BROWN,	JAMES LAURIE,
J. C. CHESBROUGH,	ISAIAH WILLIAM PENN LEWIS,





JULIUS WALKER ADAMS.



American Society of Civil Engineers. 27

STEPHEN CHESTER,	WILLIAM JARVIS McALPINE,
CHARLES W. COPELAND,	JOHN McRAE,
ALFRED WINGATE CRAVEN,	THOMAS C. MEYER,
MATTHIAS OLIVER DAVIDSON,	J. F. MILLER,
GEORGE M. DEXTER,	D. MITCHEL, JR.,
THOMAS ADDIS EMMET,	JAMES E. MONTGOMERY,
JAMES K. FORD,	WILLIAM H. MORELL,
JAMES BICHENO FRANCIS,	WILLIAM W. MORRIS,
EDMUND FRENCH,	JAMES OTIS MORSE,
EDWARD GARDINER,	THOMAS S. O'SULLIVAN,
HENRY A. GARDNER,	WILLIAM D. PICKET,
ROBERT B. GORSUCH,	SIMEON S. POST,
H. GRASSAU,	JOHN AUGUSTUS ROEBLING,
GEORGE SEARS GREENE,	WILLIAM H. SIDELL,
DANIEL L. HARRIS,	ISRAEL SMITH, JR.,
WALDO HIGGINSON,	McREE SWIFT,
GEORGE E. HOFFMAN,	WILLIAM H. TALCOTT,
JOSIAH HUNT,	WILLIAM WALLACE,
M. B. INCHES,	JOHN F. WINSLOW.

In 1854 the condition of the Society did not improve, only six meetings being held, the average attendance at which was less than during the first year. The *Record of Work Done in 1854.* Board's report deplores the fact that, notwithstanding the dues had been reduced for residents from \$10 to \$5, and for non-residents from \$5 to \$3, the total membership was only 54, of which 6 were Honorary, 1 Corresponding and only 10 Resident,

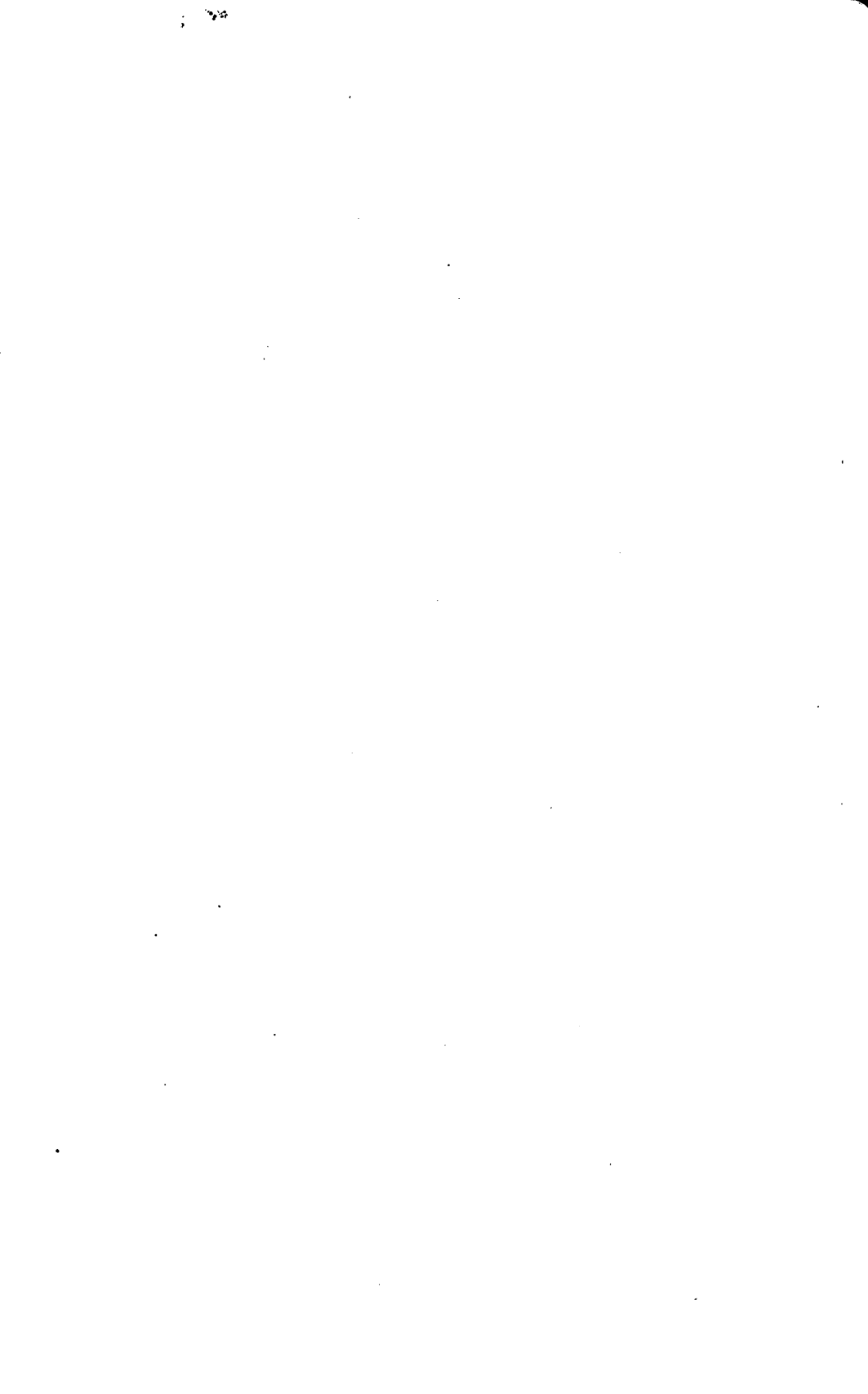
the resulting receipts for the year being \$150, and the total expenditure \$32.02. The report states that the Board was induced to make the reduction in order to "render membership less onerous, and with the hope that by so doing new members might be induced to seek a connection with the Society," and further, that "the labors of the members more than their money is wanted to make the Society useful," the recommendation of the last year "to husband the funds" being again renewed.

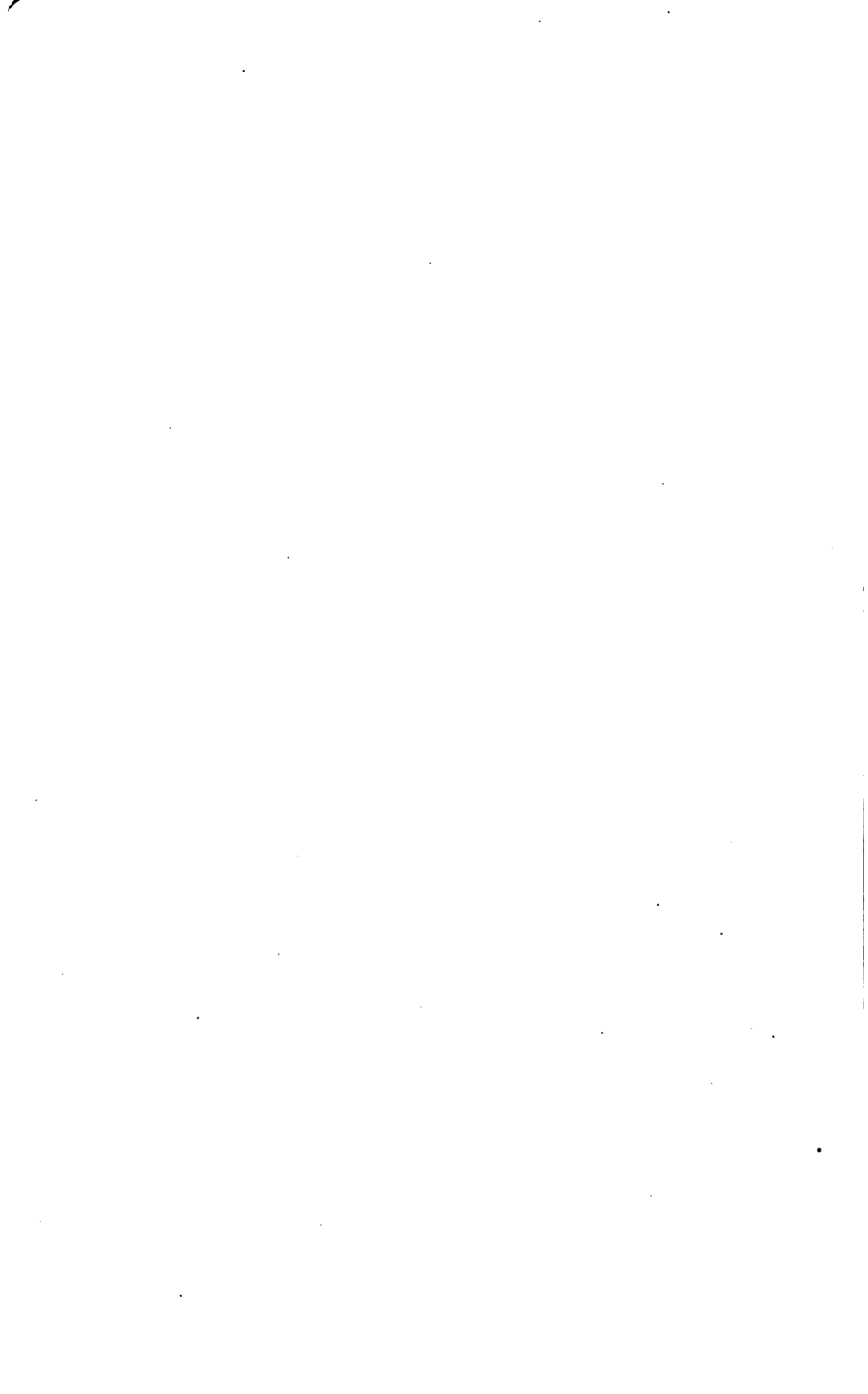
The subjects of discussion at the meetings held this year included a description of the plan adopted for rebuilding an aqueduct on the Morris Canal to replace that carried off in a

***Meetings
of 1854.***

recent freshet; the different materials then used for conveying water, with their several advantages; the comparative economy of inclined planes and steam locomotives on railroads, and "Ball's indestructible water pipe."

At one of the meetings, the death of John Hampson, Esq., Engineer, New Orleans and Carrollton Railroad, was announced, and as a matter of interest it was stated that "Mr. Hampson aided in the construction of (as a machinist) and ran as Engineman, the first Locomotive







GEORGE SEARS GREENE.

"We are inclined to believe that unless some such step is taken by which those members who cannot attend our meetings may understand our disposition and desire to consult as well their convenience and profit, our receipts from country subscribers will fall off very sensibly.

"We suggest that the experiment be tried for one year, and to that end recommend that a committee be appointed to procure a room convenient, if possible, to the office of some member who may be willing to take supervision of it, and that a desk and other necessary furniture be procured, provided that the rent of the room do not exceed \$250.00, and the cost of furnishing it do not exceed \$150.00."

The matter was taken up behind closed doors (in committee of the whole), and the record only states that "no motion was made, and the Society adjourned."

It is to be regretted that no report of this discussion has been found, as it is difficult to understand why the experiment of giving to the Society a local habitation was not tried, it having been clearly demonstrated during its two years of life that without one success was impossible.

stances of the Society, to rent a room for its business purposes, submit the following report :

"The desirableness of the Society possessing rooms of its own being on all hands admitted, the question is now as to the expediency of encroaching at this stage upon its limited means.

"We have no place now where country members can find the Society except once a month, and no place where any papers, reports, or maps, which we have collected, can be seen or consulted except at the monthly meetings.

"As country members may be frequently in the city between the monthly meetings, and can but rarely suit their visits to the time of these meetings, and as we believe that a sufficient room can be obtained at an expense not inconsistent with the means of the Society, we think that it would be well to secure such a room, and arrange to have it open daily to all the members, so that those who are unable to attend the monthly meetings of the Society can yet find and have access to any information on its files.

"To such a room we would by advertisement invite all persons having models of patented or proposed improvements to exhibit, to send them occasionally, for the inspection of such engineers or architects as might be in the city. We would endeavor to make the room in this way a point of interest for engineers, and for all inventors or others who have anything to communicate or explain to the profession.



WILLIAM MILNOR ROBERTS.

REORGANIZATION OF THE SOCIETY.

The interval between meetings proved to be a long one, as twelve and a half years elapsed before, pursuant to a call of James Laurie, President, a special meeting of the American Society of Civil Engineers and Architects was held October 2d, 1867, at the office of C. W. Copeland, 171 Broadway, Messrs.

James Laurie, J. W. Adams, C. W. *Reorganization Meeting,*
Copeland and W. H. Talcott, of *Oct. 2, 1867.*

those who were present at the first meeting in 1852, and five other of the charter members, Messrs. James K. Ford, W. J. McAlpine, Israel Smith, McRee Swift and James O. Morse (still Secretary and Treasurer) being present.

After the reading and acceptance in due form of the Minutes of the last meeting, March 2d, 1855, the President stated the object of the meeting to be "to take such steps as might be necessary to resuscitate the Society," and all those present expressed their opinion that it was advisable to revive the meetings of the Society, and pledged themselves to support an effort to that end. Messrs. Copeland, McAlpine and Morse were appointed a Committee "charged with the duty of preparing a plan for

the revival of the meetings, said plan to be so arranged as not to call for an expenditure of more than \$1,200 for the coming year," whereupon adjournment was taken to October 9th.

At the adjourned meeting held at No. 76 John Street, Vice-President Copeland, in the absence of the President, in the chair, Messrs.

Adams, McAlpine, Swift, James Adams, How, Talcott and Morse being
Report of
Committee on
Reorganiza-
tion.

also present, the report of the Committee was received and its recommendations adopted, the Board of Direction being requested to carry them into effect. The report is as follows :

"OCTOBER 8TH, 1867.

"*To the American Society of*

Civil Engineers and Architects:

"The Committee appointed at a meeting of the Society held October 2d, for the purpose of proposing a plan for the more permanent establishment of the Society, beg leave to report :

"It is assumed that whatever is to be done in the way of reviving and re-establishing the Society must be done mainly by the few members who were present at the last meeting, and who are residents of New York and the immediate vicinity.



ALBERT FINK.

“Without meaning to discuss the causes that led to the suspension for twelve years of all meetings of the Society, it may not yet be out of place to suggest that in the future we strive to avoid whatever we may have found in the past to have been detrimental to the life and prosperity of the association.

“It is, we think, true, that all societies similar to ours, that have been successful and grown to greatness, have had their beginning in a small way, but in those beginnings the social element has always been cultivated, and out of the frequent and pleasant meetings, in a social way, of a few men of kindred tastes and pursuits, have grown most, if not all, of the permanent associations of the world, that, like ours, are devoted to science and to art.

“A large majority of the future members of our Society will be non-residents of New York, but most, if not all, will at times visit here. As members of the Society they will wish to meet with some of its representatives here, and to know for themselves that the Society is a fixed institution.

“Heretofore we have not been able to offer any such welcome to our members, or to do anything to keep alive a feeling of interest in the Association.

“But the argument need not be further gone into. We will confine ourselves to the plan we have to propose.

"We have offered to us, on the corner of William and Cedar Streets, two blocks from Broadway, and two short blocks from Wall Street, two rooms in the third story, directly over the rooms of the Chamber of Commerce. The building is elegant, its entrance and stairway are commodious, and there is altogether an air of quiet respectability about the place, in every way suited to our wants. Together with these advantages, there is one which may contribute a good deal to the fitness of the place for our wants. We allude to a private restaurant in the upper story of the building, kept by the janitor of the building (an aged old-time negro servant) for the use of the occupants of the building, and many of the gentlemen connected with the banks and insurance companies of the neighborhood.

"The rooms are connected by sliding doors. The larger one is about 20 x 14, the other about 14 x 10; both have grates, and the larger one has fixtures for Croton water. Gas outlets are provided suitable to our wants, but there are no gas fixtures.

"The owners will paint and clean the rooms, and intimated that they would give us a new handsome grate and mantel. The rent is, in our opinion, remarkably low, it being but \$400 for one year. We can take the rooms for a term of years, or for one year.

"We recommend that said rooms be taken by



JAMES BICHENO FRANCIS.



the Society, that they be suitably fitted up, and that the next annual meeting be held there.

"To this end we recommend that a committee be appointed, charged with the duty of engaging the rooms, of furnishing the same at a cost not exceeding \$600, and of preparing such additions to the By-Laws of the Society as may be deemed necessary to serve for the proper care and management of the rooms."

The Annual Meeting, November 6th, 1867, in the Chamber of Commerce Building, 63 William Street, was the first held by the Society in rooms devoted exclusively to its use, and marks the beginning of a steady growth in the number of its members, and consequently in its usefulness, which has been continuous to date. The report of the Treasurer, showing the assets of the Society to be \$1,592.07, was presented.

It should be here noted that the funds left in Mr. Morse's hands in 1855 amounted to \$266.93, and that his account shows that he returned a total of \$497.57, nearly all the funds having meanwhile been placed by him in a savings bank, and the interest added.

Action on a long list of proposed members was deferred until the next meeting, and

officers were elected as follows: President, James P. Kirkwood; Vice-Presidents, Charles W. Copeland and Julius W. Adams; **New Officers Elected.** Secretary and Treasurer, James O. Morse; Directors, William J. McAlpine, William H. Talcott, James K. Ford, Alfred W. Craven and George S. Greene.

All unpaid charges against members for back annual dues were remitted, and under this action the date of membership of many of the old members was preserved. Dues were fixed at \$10 and \$5, respectively, for resident and non-resident members.

The following resolution was passed at this meeting, and it would appear from the foregoing account of the progress of the Society to this time that no resolution of thanks, subsequently passed, is more worthy **Resolution of Thanks to Mr. Laurie.** to be entered on our minutes. It is one which some 2,500 engineers, who have since been connected with the Society, could all endorse, for, as was well said by his immediate successor in the first published Annual Address of the President, "The organization of the Society is mainly due to the persevering efforts of Mr. Laurie."



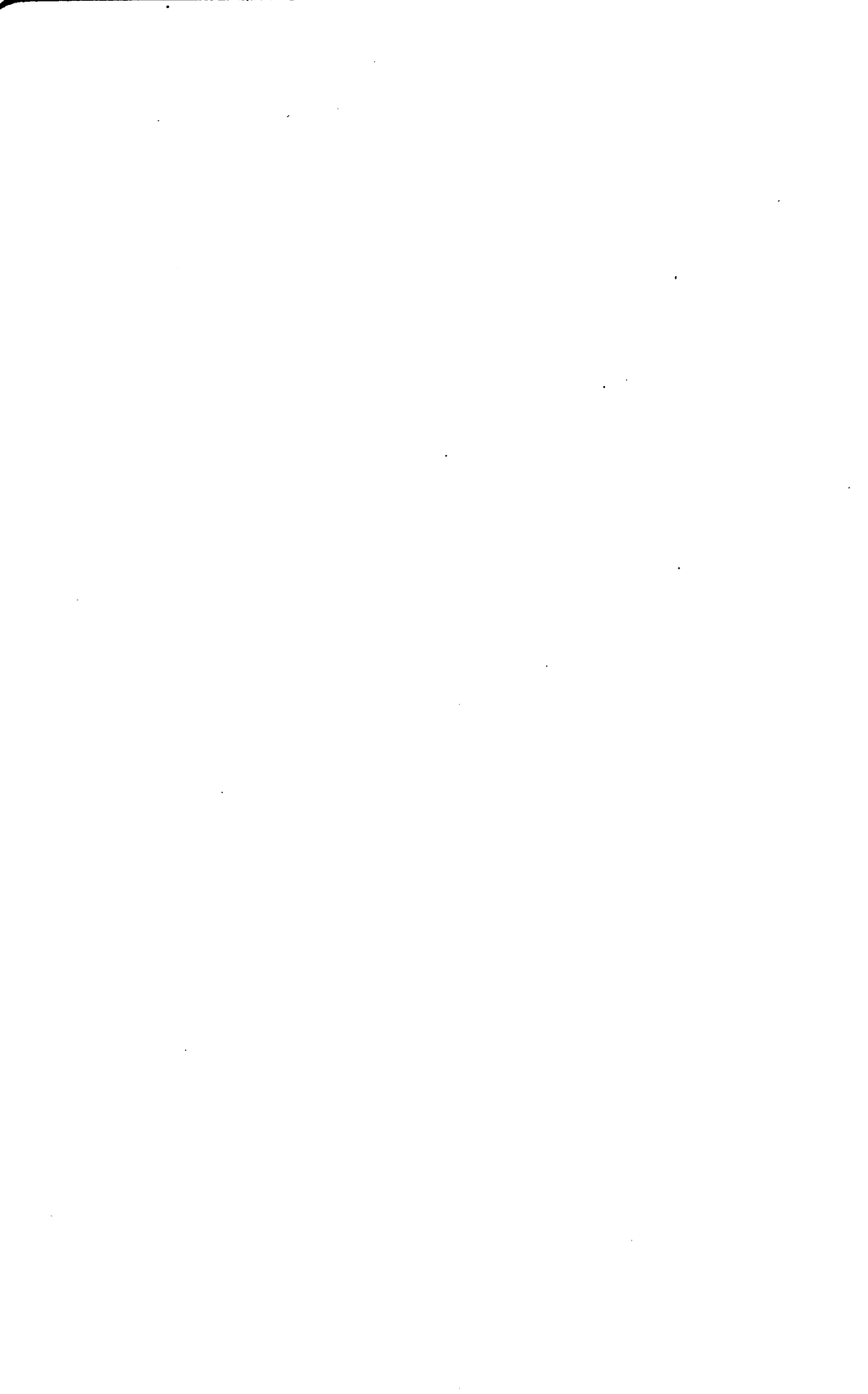
ASHBEL WELCH.

This bond, he states further, "must be maintained and nourished by palpable food," and to that end the papers must be printed, as their dissemination among the absent members is "essential to our continuous and successful existence."

Much interest was evinced in the meetings of this year, although the attendance was not so large a percentage of the resident membership as it is to-day, with which fact the lack of rapid transit facilities doubtless had much to do. The attitude of some out-of-town engineers is well shown in a letter *Letter from Chas. Paine, 1868.* read by the Secretary at one of the meetings in 1868. It was written from Toledo, O., by Mr. Charles Paine, now one of our honored Past-Presidents, and runs as follows:

"The success of the Society of Engineers lies so near my heart that I venture to make, through you, some suggestions as to what would make it of interest to country members, although, very likely, the suggestions will not be new. I believe the Society aims at becoming for America what that of England is for that country, and to make its endorsement of an engineer of value, and almost indispensable to professional respectability. Now the United

States extends over so large an area that this will not be possible unless the Society gives the very strongest evidences of its strength and usefulness, or unless it counts as members all the really able and distinguished engineers of the country. First, then, the able men who have started it have got to put forth all their energies for its advancement by using their personal influence to induce other able men to join, and by contributing their best papers to its meetings, which should be published promptly and sent to members. If this were done, as I understand it has before been proposed, I think it would be the best advertisement of the Society which could be made, because such papers would be of the first value to all engineers who wish to keep up with the latest experience. I think it would be a very useful thing, too, to print semi-annually or quarterly a list of members, so that we, who are remote from New York, could know who are our associates. If to be a member does not make a man owe some duties to the Society and the Society some to him, the institution will not be able to sustain itself. On that account I think the rule of the British Institution would be of excellent value here, which requires that a member shall contribute some original paper, model or drawing to the Society within a year after his election. It would bear particularly hard upon the humble individual who now





DON J. WHITTEMORE.

addresses you, but, for the good of the Society, I would vote for the rule, and scratch my head until I got hold of some idea that would pass."

A fact not generally known is that while at an early meeting of the Board of Direction in 1852 instructions were given for the incorporation of the "Ameri- *Incorporation of the Society.*
can Society of Civil Engineers and Architects," the proper steps were never taken, and therefore this name never legally belonged to the Association. On March 4th, 1868, by a vote of 17 to 4, the name was changed to "American *Change of Name.*
Society of Civil Engineers," but it was not until April 17th, 1877, that the lack of incorporation was discovered and the proper steps taken to remedy the defect.

In the early transition period many changes of policy were discussed, as is shown by proposed amendments to the Constitution and By-Laws, but in the main the ideas expressed in those which prevailed are in force to-day. Within five *Early Constitutional Changes.*
months of the reorganization, applications for membership were placed in the hands of the Board of Direction for report to the Society of such as after sufficient inquiry

could be recommended for membership, and in February, 1870, the Associate grade, identical with the original requirement for Member, was established. To it were admitted "Civil Geological, Mining and Mechanical Engineers, Architects, and other persons who, by profession, are interested in the advancement of Science," and to them all the privileges of membership, except the right to vote, were accorded.

The qualifications for a Member were made more definite, the requirement being active employment in the practice of the profession for five years, and that he shall have been "in charge of some work in the capacity or rank of Superintending Engineer, as that term is now understood," the diploma of any collegiate institute in good standing being equivalent to two years' service.

The collection of a fund was inaugurated by the Society June 3d, 1868, to be raised by "fellowship among the patrons
Fellowship and capitalists of public improve-
Fund ment and those interested in the
Established. onward progress of the sciences."

It was to be used for the single purpose of printing and disseminating papers, and, after great



FREDERIC GRAFF.

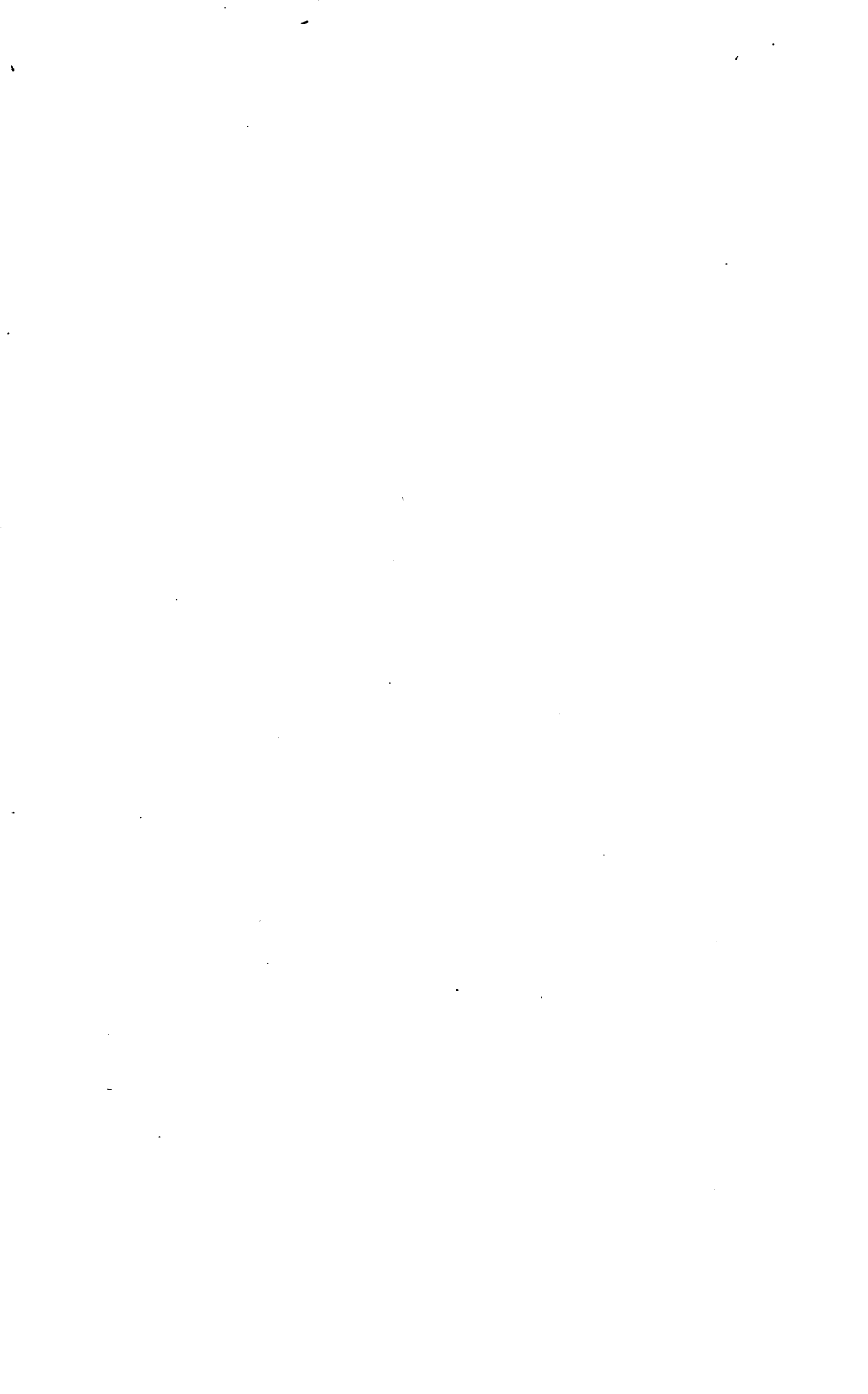
career, to be signed by him, and the endorsement of his proposers appended to a certificate, were adopted in August, 1872.

During 1870 the Society continued to prosper. Many additions to its library were made. Six papers were published and several others read and discussed. The dues were raised to \$20 and \$10 for Resident and Non-Resident Members respectively, and the Board's report speaks of "judicious management of still limited means."

***Progress
in 1870.***

At the Second Convention, which was also held in the Chamber of Commerce, New York, the record is that the "proceedings were interesting, the spirit of the members excellent, both socially and professionally, but the number present was less than anticipated and hoped for," which doubtless led to the movement to hold future conventions in other localities of the Union, with a view to strengthen the national character of the Society. This was first carried out in June, 1872, when the Fourth Annual Convention was held in the City Council Chamber at Chicago. It was well attended, twelve papers were presented, and a dinner served at the Parker House.

***Early
Conventions.***





WILLIAM EZRA WORTHEN.

circular has been found giving this attendance as 79 Members and Fellows, and, as indicative of the growth and influence of the Society and of the profession in America, it is interesting to compare these figures with those of a convention held twenty-two years later at which the total attendance, including guests, was 612.

In a manuscript list of members there is a statement showing that twenty-three years ago (September, 1873) about 70% of the total membership was non-resident. It is, therefore, evident that the national character of the Society was at that time well established. At the present time only about 20% of the membership is resident.

November 3d, 1875, the organization of "The Civil Engineers' Insurance League," to be a voluntary organization formed within the Society to aid and benefit the families of deceased members, was recommended by a committee and adopted, and a circular in regard to it issued, but the answers received were unsatisfactory and the attempt was abandoned.

***Proposed
Insurance
League.***

The original idea of our present collations at meetings is indicated in the following addition to the By-Laws, adopted February 2d, 1876.



THOMAS COLTRIN KEEFER.

"The officers of the Society may give a reception at the Society's rooms on the evening of the second and fourth Wednesday of each month, between October and April, for the purpose of in-
Origin of Collations.
formal professional conversation and social intercourse. Regulations concerning refreshments and the invitation of guests may be made by a committee appointed for the purpose, but shall be without expense to the Society."

Collations at ordinary meetings were first introduced in 1884, and have been continued since that time with only a few lapses due to temporary lack of funds, the money for this purpose coming from the voluntary subscriptions of resident members.

Up to this point it has been the writer's endeavor to give the salient events of the Society's history in chronological order, but to avoid confusion it has been found necessary to codify the remainder of this sketch under several general heads.

LOCATIONS OCCUPIED BY THE SOCIETY.

In 1871, it became necessary to enlarge the quarters of the Society in William Street, and additional rooms were rented, which it was said would "prevent for a long time the necessity for enlargement for any future meetings."

In May, 1874, these additions proving inadequate, it was deemed advisable to look for other quarters, and the requirements as set forth in a brief abstract of a report of a committee on the subject might with slight alteration be made use of to-day. They are stated as follows :

"The assembly room for public meetings should be large enough to provide for the increasing attendance on the Society's meetings, and so arranged that all present can see and hear. For meetings of the Board of Direction and of committees, a smaller room is needed, devoted especially to this use and secure from intrusion. For library and reading rooms, large wall space, with an abundance of light is required—in the first, quiet should be maintained and convenience provided for study without interruption. In the storeroom, also, work may be done connected with the Society, but not directly relating to members, as the preparation and





MAX JOSEPH BECKER.

mailing of Transactions, printing of circulars, or the cataloguing of the Library, and especially that which causes litter and dust.

“These rooms should be contiguous, and each accessible without interference with the others; they should be located so as to be easily reached by a large proportion of the resident membership. It is desirable that they be in a fire-proof building.”

A canvass of the resident members with reference to their places of business and residences was made, and it was found that “during the day Broadway and Chambers Street was not far from central, while at night Union or Madison Square would be most convenient to a large majority.” Various schemes were proposed, one to lease a dwelling, use part of it for Society purposes, and rent the remainder as offices to professional men; another, that a union with one or more kindred associations for this purpose be formed. The result was that on May 1st, 1875, new rooms on the southeast corner of Broadway and Twenty-third Street, overlooking Madison Square, with an entrance at No. 4 East Twenty-third Street were moved into. They comprised that part of the third

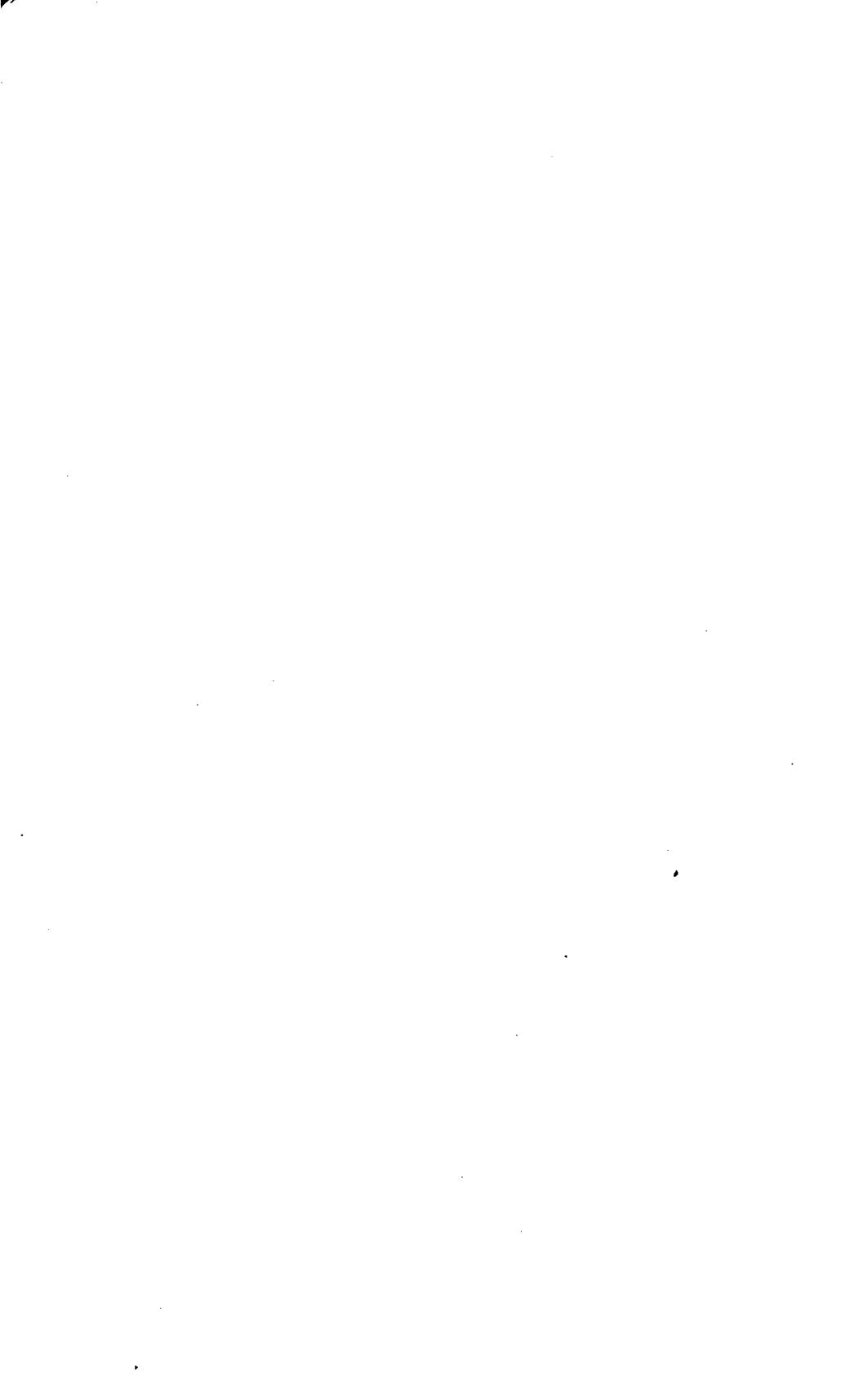
***Location of
Resident
Members,
1874.***

***Rooms at
Broadway and
23d Street.***

floor of the building fronting on Twenty-third Street, with a frontage on Broadway of about 25 ft. The corner room was quite large, and was used as a library and for meetings. There was also a room used for meetings of the Board of Direction, and an office for the Secretary. The experiment was here first tried of opening the rooms on the evenings of Monday, Wednesday and Friday, with the intention that, if the attendance should warrant it, they should be opened every evening. On August 1st, they were so opened, but the report of the Board in November, 1876, says that the experience gained in this endeavor to foster their increased use by members was not favorable to the effort, and the attempt was abandoned after more than one year's

***Library
Opened in
the Evening.***

trial. The next effort in the same direction was made in December, 1877, and January and February, 1878, during which period the Library was opened on Thursday evenings, from 7.30 to 10 p. m. On April 1, 1891, the Society passed a resolution that the Library should be opened during every evening except Sunday, but the Board of Direction declined to carry this out on account of the considerable expense involved.





WILLIAM POWELL SHINN.



\$30,000, \$5,000 of which it was necessary to pay at once, the amount had to be procured by each of ten members advancing \$500, which was repaid from subsequent subscriptions, varying in amount from small sums to one of \$2,500. In recognition of this large contribution, made by Thomas Fitch Rowland, M. Am.

Soc. C. E., by action of the Society, through the Board of Direction, the "Rowland Prize" of \$50

***Rowland and
Collingwood
Prizes.***

in cash, to be awarded annually to the paper deemed most worthy, was established in 1882, and the first award made in 1883. The "Collingwood Prize," consisting of \$50 in cash, to be awarded to the best paper presented each year by a Junior, was instituted by Francis Collingwood, M. Am. Soc. C. E., at the Annual Meeting in January, 1894, and the first award made in June, 1895.

For more than fifteen years the work of the Society has gone on in this building. The purchase has proved to be a judicious one, the present value having been appraised by conservative real-estate dealers at twice the purchase-price. In 1886, however, the same state of affairs as obtained in William Street, at Broadway and Twenty-third Street and in

Twentieth Street, was again evident. The meetings held in the parlors of the house, which is a typical old-style New York residence, were overcrowded. There was little room for the rapidly increasing library, and absolutely none for the proper display of the collection of models and maps started years before. An-

other building fund was started at
Second Build- the Nineteenth Annual Conven-
ing Fund, tion, held at the Hotel Kaaters-
1887. kill, N. Y., in July, 1887, \$9,169

being subscribed. As this amount was insufficient in the then financial condition of the Society to warrant the Board in undertaking to secure a house adequate for evident future needs, and as it was absolutely necessary that some action should be taken, it was determined

to add to the present house an ex-
Addition to tension, which for some time would
Present House answer the requirements for a
built. meeting-room and library. This

room was first used at the Annual Meeting in January, 1890 ; it seats comfortably ninety-five persons, but the Board, in reporting to the Society that year, states with much distinctness that it should be considered only as a temporary relief for a few years, and that efforts



MENDES COHEN.

to secure the amount necessary for building a proper house should not be relaxed.

On many recent occasions standing room only has been all that could be furnished at regular meetings. In addition to this, it has been necessary at Annual Meetings to abandon the house altogether and hold them in a convenient church.

Nothing further was done, however, until May, 1895, when a circular was sent to all members to test the sense of the Society on the subject. At the *First Movement Toward New House.* Convention in June the responses received were reported, and were so favorable that the Business Meeting unanimously declared its opinion that new quarters should be procured, and referred the whole matter to the Board of Direction.

After careful consideration of many proposed locations, the property Nos. 218 and 220 West Fifty-seventh Street, 50 ft. front by 110 ft. depth, was purchased, and *Purchase of 57th Street Site.* as a result of a limited competition, in which members of the Society were invited to take part, twelve designs for a new house were received. The design submitted by Mr. Cyrus L. W. Eidlitz was accepted.

Ground was broken in July, but, owing to the uncertain financial outlook, nothing further than the excavation was attempted until after the presidential election. On December 1st, 1896, the contract for the erection of the building complete was awarded. The work was started a week later, and at the present writing is fairly under way. It is confidently expected that the building will be ready for occupancy by the first of October, 1897, and, if that expectation is realized, the Society will then be in possession of a home to which all its members can "point with pride as an evidence of our being something more than a parchment Society."



WILLIAM METCALF.

Germany, Great Britain, Italy, The Netherlands, Portugal, Russia, Spain, Sweden and Switzerland, were presented to the Society after the close of the exhibition.

In recognition of its efforts an award was made by the United States Centennial Commission to the American Society of Civil Engineers "for the very large and important exhibition, and for the great service rendered by the Society to the art and science of engineering."

In the early part of 1878 the Society undertook the preparation of an exhibit by American engineers at the Paris Exposition of that year. The report of the Committee having charge of this exhibit is printed in full in the *Transactions*. *Paris Exposition, 1878.*

The exhibit covered the general departments of engineering as follows: Foundations and masonry, superstructure, hydraulic machinery, internal navigation, railroad rolling stock, rivers and harbors, and gas engineering; and consisted of designs and photographs of works built in America, or then in course of construction.

There were but nine grand prizes given to the American exhibitors at this Exposition, and one of these, a Diploma of Honor, was awarded

to the Society. The International Jury in making the award, regretted "that the collective character of the exhibit prevents the award to each one of the engineers whose works are represented, of the medals which they merit."

The International Engineering Congress, held in connection with the Columbian Exposition in Chicago in 1893, was divided into seven divisions, the first of which, known as "Division

Engineering
Congress,
1893. A, Civil Engineering," was placed in charge of this Society. Beginning with Monday, July 31st, 1893,

six daily sessions of this division were held; sixty-three papers were presented, forty-five of which were written by foreign engineers, Germany, Mexico, Portugal, England, The Netherlands, France, South America, Canada, Italy and Australia being represented in their authorship.

Many of these papers were received in foreign languages, and translations of them were made in every instance by volunteers from the membership of the Society. Three hundred and eighteen engineers were registered at the sessions of this Division, and the average attendance at each session was one hundred and twenty-five. A steady and intelligent interest



GEORGE SHATTUCK MORISON.

in the work of the Congress was manifested during the whole week. The papers presented, with the discussions, were subsequently published in two large volumes of *Transactions*, the Society bearing the entire expense.

In addition to this, in February, 1893, a special committee was appointed for the purpose of providing a bureau of information and courtesy for the benefit of visiting foreign engineers, and many visitors were received at the House of the Society and furnished with facilities for visits to such objects of technical interest as were of special interest to them. A pamphlet containing a reference map of the United States and British Possessions and part of Mexico, with a list of engineering works, mines and industrial establishments, with names of local representatives, and other matters of interest, was published by the Society and presented to all visiting engineers.

PUBLICATIONS.

In the early part of 1873 the following resolution was adopted:

“Resolved, that hereafter every paper presented to the Society shall be immediately examined by the Library Committee, who shall decide whether it shall come before the Society. If yes, it shall be printed in cheap form and distributed to the members, with notice that discussion, written or oral, will be received, within definite limits as to time; at the
Advance Pub- expiration of which, said discussion,
lication of with the original paper, shall be re-
Papers, 1873. ferred to a special committee, with instructions to examine and recommend a final disposition of the same, with reference to the permanent proceedings of the Society.”

In this year the issue of a publication of not less than forty-eight pages on the second Wednesday of each month was decided upon, to contain:

“Papers as submitted to the Society, promptly upon their acceptance; papers already submitted, still unpublished and the discussions thereon, beginning with the proceedings of the last Annual Convention; comments and discussions on papers thus published; a current list of new scientific and engineering books, with brief examinations of the more important, at the discretion of the Committee on Library;

Monthly Issue of Publications Started.





THOMAS CURTIS CLARKE.

abstracts of the proceedings of the Society and Board of Direction which are of general interest to members; announcements of meetings to be held, papers read and topics discussed; reports and other communications from the Society to members, and professional inquiries and replies from members themselves; and a list of additions to the library and museum during the preceding month, with acknowledgments of donations received; also, that select advertisements, to be approved by the Committee on Library, be received and published therewith.

"The pages to be 'made up' so each paper and the discussions thereon may be consecutively arranged for binding, and the other less valuable matter detached; the numbers copyrighted, to prevent an unauthorized reprint, or one without acknowledgment; the papers and discussions may be stereotyped, for issue at yearly intervals in bound volumes of such as shall be deemed worth preserving."

This was the origin of the separation of *Proceedings* and *Transactions*, which has been followed with minor modifications and improvements to the present date.

It is impossible to determine for how long a period the regular publication on a fixed day of the month was carried on, or just at what date the issue of each monthly number became spasmodic, but it is certain from the long ex-

perience had, that no regular monthly date of issue can be maintained for a publication whose contents are dependent on the completion of discussions on enough papers to make up the requisite number of pages.

The number of *Transactions* for the month of November, 1873, was the first issued, the first fifty-seven papers making up Volume I, and part of Volume II having been printed separately. Volume III begins with the number for May, 1874, and Volume IV with that of April, 1875. From 1876 to 1886 the number of

Number of pages published was only sufficient
Volumes Pub- to form one volume per annum,
lished Annu- but, beginning with 1887, two have
ally.

been issued yearly, except in 1893, when the papers presented to "Division A" of the World's Engineering Congress made it necessary to issue three.

The system of printing a few extra copies of each paper prior to its presentation to the Society, and of sending these to a few individuals selected by the Secretary, with a view of securing discussion from those most competent to handle each subject, was followed from June, 1879, to April, 1892, when it was determined to publish a semi-monthly *Bulletin* to contain all





JAMES OTIS MORSE.



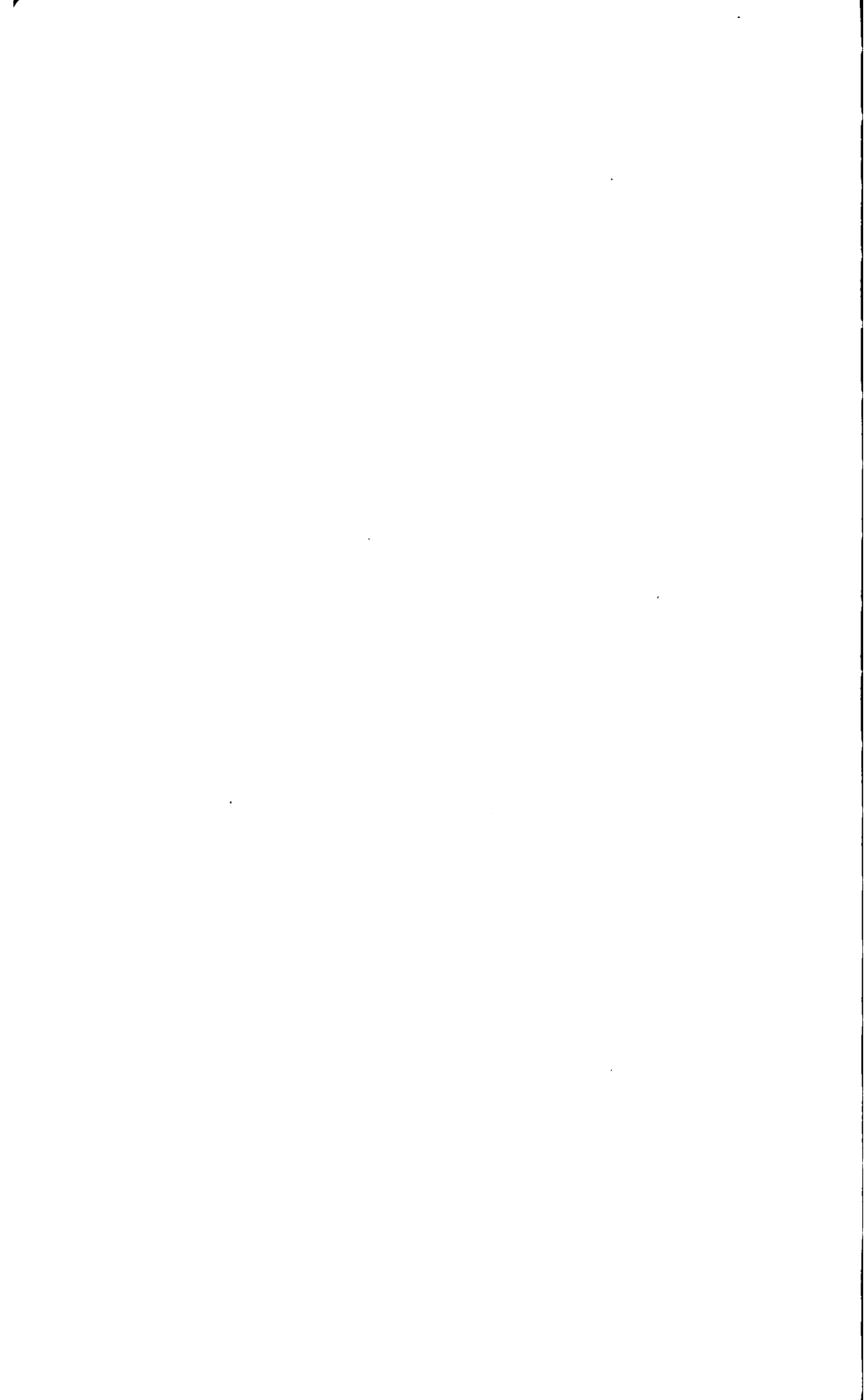
announcements usually printed in circulars, and brief abstracts of the papers to be read at the next following meeting, the latter for the purpose of drawing the attention of each member to the subject-matter ***Semi-Monthly Bulletin Started.*** in each paper, a complete advance copy of which would be sent him upon application. Sixty-nine issues of this *Bulletin* were made, the last dated December 12th, 1895.

The present system of publication comprises a periodical called *Proceedings* issued regularly on the fourth Wednesday of each month, except June and July, and containing all matter pertaining to the ***Present System of Publication.*** business of the Society, minutes of previous meetings, notices, etc., and copies of each paper accepted by the Publication Committee for presentation to subsequent meetings. These papers are reproduced in volumes of *Transactions* together with all the discussion and correspondence brought out by them, the number of volumes so published to be dependent upon the volume of printed matter in each year. During the past year two volumes of about six hundred pages each were issued. The system can be said to work

well. Its advantages are the prompt publication of any paper as soon as accepted, and its immediate availability for reproduction or discussion in the technical press ; the placing in the hands of each member of an advance copy of every paper published, thus securing a more widespread and carefully considered correspondence ; regularity in the date of publication of all Society business ; ample time for correction or modification by the author, and for careful editorial supervision before final publication in permanent form in volumes ready for the shelf. Standard bindings in cloth and half morocco have been adopted and may be secured at cost by any member through the Secretary.



ALFRED PANCOAST BOLLER.



BADGE OF THE SOCIETY.

The first movement for the adoption of a Society Badge was made at the Annual Meeting of 1884, the Board of Direction being requested to prepare a suitable badge to be worn by members at meetings, and *First Badge Adopted 1884.* which might be worn by them at other times. A committee appointed for the purpose by the Board reported in March, recommending a design (here reproduced), which was adopted. This badge remained in use ten years.

At the Annual Convention, June, 1892, a resolution was passed requesting the Board to "consider the propriety and advisability of adopting a new badge for the Society," and on the recommendation of the Board in January, 1893, the membership was canvassed through the medium of a suitable interrogatory circular, in order to ascertain the feeling in regard to the matter. Through a committee the Board reported in January, 1894, the result of this inquiry, which was that 68% of the answers received from members indicated that the writers would probably purchase new badges, provided a satisfactory design were adopted.



The Committee was continued and instructed to make recommendations, and at the Annual Convention at Niagara Falls in June, 1894, presented a recommendation that a ***Present Badge Adopted 1894.*** design similar in shape to that already in use, bearing the inscription, "American Society of Civil Engineers, Founded 1852," be adopted. This was adopted by the Society. The badge is now issued in two colors, blue enamel for Corporate Members and maroon for Associates and Fellows, and the Board determined that in future no badges should be issued to Juniors.

The popularity and general value of such an emblem as a mark of identification is attested by the fact that to date, 1,048 of the old, and 422 of the new, badges have been issued, and that since the adoption of the latter it has been used on all the printed matter and stationery emanating from the Society.



GABRIEL LEVERICH.

CONSTITUTIONAL CHANGES.

In 1872-73 the entrance fees and dues were raised to the amounts now in force, and the Fellowship fee was increased to \$250. This was again reduced to \$150, November 4th, 1874. The question of the estab-
Fellowship Fees.
lishment of chapters and of the admission of students was much discussed, but no action taken.

The letter ballot, to enable non-residents to vote in all elections, was introduced November 5, 1873, and many slight modifications made in the Constitution. Indeed, it may be said that the most skillful an-
Letter Ballot Introduced.
alytical mind might well become confused in an attempt to follow for a number of years the successful and unsuccessful attempts to change the existing law, and to determine what its provisions actually were at the end of each month.

During 1877 many amendments to the Constitution were proposed, some of which were adopted January 2d, 1878; the main changes being the require-
Amendments of Jan. 2, 1878.
ments increasing the number of endorsers for each candidate to five; allowing members to vote either by ballot

or by letter, and relating to the expulsion of members.

On June 18th, 1878, the first Nominating Committee was appointed, the Society being divided into five geographical districts, from each of which a member of the **First Nominating Committee.** Committee was selected, and this custom has been followed ever since. The divisions were, New York and the Atlantic Coast, Pittsburg and the Ohio Valley, Chicago and the Lake region, St. Louis and the Mississippi Valley, New Orleans and the South. It is evident that at that time San Francisco had not been considered as a possible point at which to hold a successful convention.

In January, 1879, the first codification of the Constitution was adopted, and at the same meeting eight articles were amended, and two years later the date of the Annual Meeting was changed from the **Date of Annual Meeting Changed.** first Wednesday in November to the third Wednesday in January.

In 1885 the question of the advisability of changing the organization so as to admit local engineering societies as branches was carefully considered, but after correspondence with many





JOHN BOGART.

such, the Board reported in December, 1886, that no desire for the proposed change then existed.

On March 4th of this year a provision was made for the compounding of all future dues by any member by a single payment.

At the Annual Convention held at the Hotel Kaaterskill in 1887, an exhaustive discussion on the propriety and advisability of the creation of a new grade of "Students" was

had, and a Committee appointed to consider the matter reported in Oc- *Admission of
"Students"*

tober, recommending the formation of such a class, but on March 7th, 1888, the amendments offered by the Committee were lost. At this meeting a clause was added to the Constitution providing for the reconsideration by the Board of a candidate rejected by the Society; the ballot to be an open one and five negative votes excluding; and also authorizing members of the Board to endorse, upon sufficient evidence, foreign applicants for membership. *Discussed.*

On June 24th, 1889, a committee was appointed to consider and report upon "a systematic revision of the Constitution and By-Laws, so as to afford the Society the best basis for

its continued growth and an increased measure of usefulness." This Committee reported No-

vember 6th, 1889, a codification of the existing Constitution and By-Laws, containing only verbal changes, and on March 5th, 1890, these were adopted. The Com-

mittee was continued, and took up with great earnestness the discussion of affiliation with existing local societies, making an exhaustive progress report on the subject in January, 1890, the purport of which was that the formation of a plan for such affiliation would meet with insurmountable obstacles, due to the radically diverse views held by the various bodies communicated with. In December, 1890, a new constitution was presented by the Committee, which after a most full discussion of

each proposed article at the Annual Meeting of 1891, was adopted, with a few amendments, by a vote of the whole Society, March 4th, 1891.

The Board of Direction was increased by the addition of all living Past-Presidents who continue to be members. The number of Vice-Presidents was increased from two to four, and the number of Directors from five to eighteen,



FRANCIS COLLINGWOOD.

so selected that six shall be resident Corporate Members, and two from each of the six non-resident districts, the latter to be designated each year by the Board of Direction. The President was made ineligible for re-election, and the Vice-Presidents and Directors for re-election to the same office until at least a full term shall have elapsed after the end of their respective terms.

***Provisions
of New
Constitution.***

Reference should also be made to the additional requirements for the grade of Member; to the class of Associate Member, the requirements for which are substantially those previously in force for Member; and to the marked change in the grade of Junior which is now open to any young man under thirty years of age, of technical education or who has worked as an engineer in a subordinate position for two years, but whose connection with the Society ceases at the above age limit unless he has been transferred to another grade. The practical working of this system is familiar to all who have read the recent Annual Reports, and a large percentage of Members elected in the last four years have been transferred from the Junior and Associate Membership grades;

it is evident that not far in the future, elections to the highest grade which have not followed the natural and proper course through each of the lower ones in turn will be rare.

Naval and electrical engineers and marine architects were added to the list of those eligible for membership.

On October 3d, 1894, various amendments were made, the most important of which were that the class of "Subscribers" ***Amendments of 1894-95.*** was eliminated, and that the Secretary should be elected by a majority of the whole Board of Direction.

In March, 1895, several amendments relating to endorsers of candidates, reconsideration ballots in the case of a rejected candidate, the method of the appointment of the Nominating Committee, and the appointment of an Assistant Secretary, were adopted.

The rate of the Society's growth in numbers is shown in the following table, from which can also be told at a glance the years of the addition of the various grades.



CHARLES WARREN HUNT.

**Increase of Membership, American Society of Civil Engineers,
1853-1896.**

YEAR.	Honorary Members.	Corresponding Members.	Members.	Associate Members.	Associates.	Juniors.	Fellows.*	Subscribers.*	Total.	Increase.
1853..	6	1	48	....	....	....	..	..	55	...
1854..	6	1	47	....	....	....	..	..	54	-1
* * *	* *	* *	* *	* *	* *	* *	* *	* *	* *	* *
1869..	....	....	....	....	....	....	..	..	160	...
1870..	....	....	191	....	1	....	51	..	243	83
1871..	....	....	215	....	5	....	59	..	279	36
1872..	4	....	278	....	7	....	48	..	337	58
1873..	6	....	329	....	17	....	62	..	414	77
1874..	7	....	355	....	15	7	61	..	445	31
1875..	7	....	371	....	18	36	60	..	492	47
1876..	6	3	417	....	16	51	59	..	552	60
1877..	6	3	436	....	16	56	57	..	574	22
1878..	6	3	454	....	17	57	56	..	593	19
1879..	6	3	464	....	18	54	56	..	601	8
1880..	12	3	473	....	20	48	55	..	611	10
1881..	11	3	513	....	24	54	52	..	657	46
1882..	10	3	565	....	30	58	53	37	756	99
1883..	9	3	589	....	31	67	57	39	795	39
1884..	10	3	657	....	34	77	57	40	878	83
1885..	8	3	701	....	33	89	54	40	928	50
1886..	9	3	760	....	44	106	57	40	1 019	91
1887..	8	3	838	....	45	120	56	40	1 110	91
1888..	10	3	944	....	48	144	54	40	1 243	133
1889..	8	3	1 010	....	55	169	51	39	1 335	92
1890..	7	3	1 080	....	61	215	51	38	1 445	110
1891..	5	3	1 108	49	63	221	49	38	1 536	91
1892..	8	3	1 134	109	69	238	48	35	1 644	108
1893..	9	3	1 172	146	68	253	47	35	1 733	89
1894..	9	3	1 189	186	73	266	47	35	1 808	75
1895..	8	3	1 240	237	74	278	47	33	1 920	112
1896..	8	3	1 252	282	82	318	41	32	2 018	98

* Exclusive of those in other grades.

WORK ACCOMPLISHED.

In the foregoing account the progress of the Society has been traced, its various migrations from place to place noted, and a general statement made in regard to constitutional changes and to the publications; but something should also be said as to the work accomplished. This is, perhaps, best shown by its technical publications. There have been 801 papers published. These have been in many instances widely discussed, and it would be impossible to enumerate in the space available here even those which have become classic.

The following list is a general classification of the subjects treated ; it cannot be considered more than an indication, because it is derived from the titles of the articles, and in many cases both the paper itself and the resulting discussion are not confined strictly to any one of the heads here noted.

<i>Hydraulic Engineering :</i>	No.	Per-centage.
General, 35 ; Rivers, 28 ; Water-Works, 47 ; Dams, 18 ; Canals, 15 ; Irrigation, 7 ; River and Harbor Improvement, 39.....	189	= 23.60
<i>Bridges :</i>		
Descriptive, 55 ; Theoretical, 34 ; Specifications, 5 ; Tests, 9 ; Details and Miscellaneous, 14.....	117	= 14.60

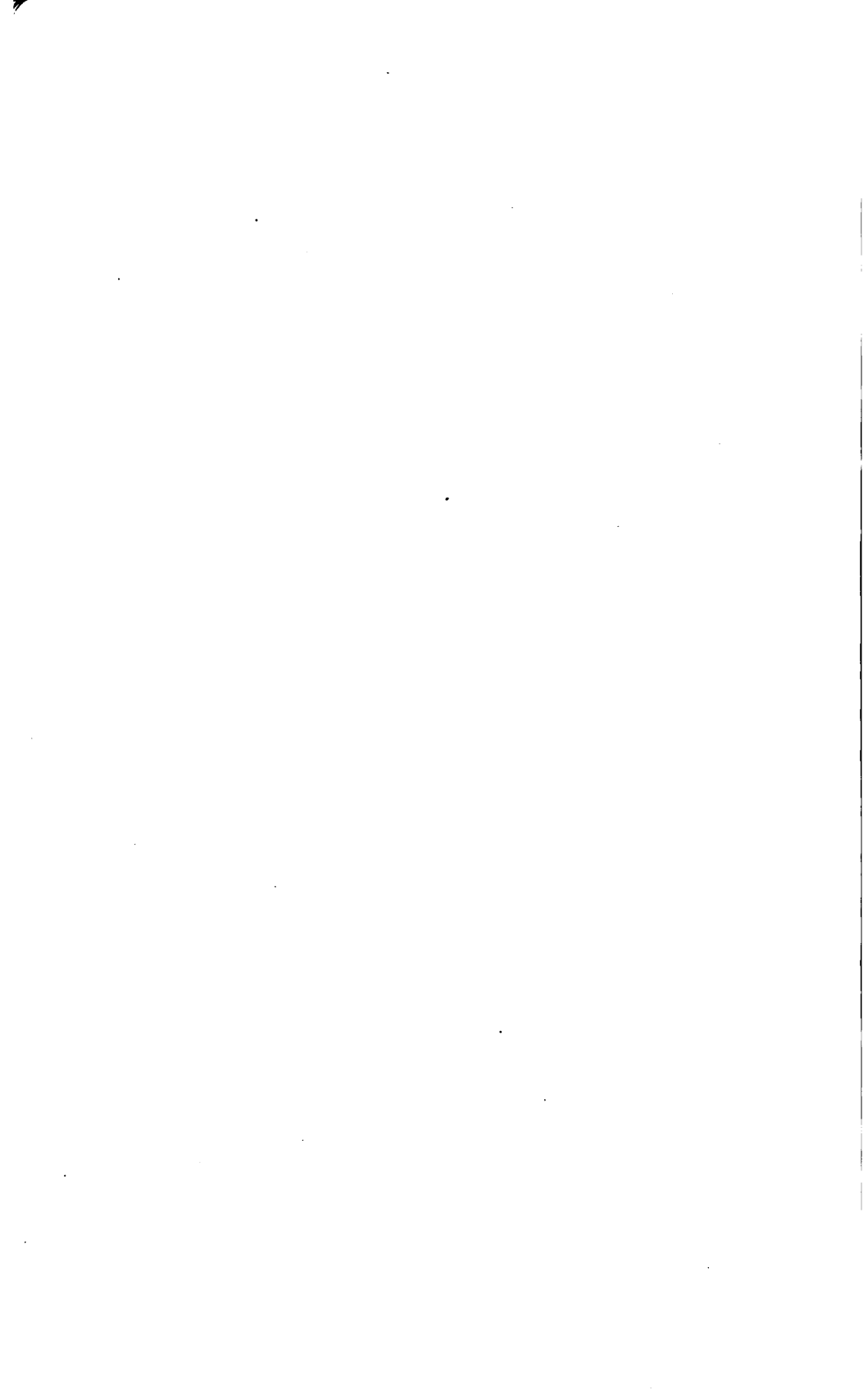


J. JAMES ROBERTSON CROES.

American Society of Civil Engineers. 81

<i>Railways :</i>	No.	Per-centage.
General, 25 ; Location, 19 ; Rails and Track, 30 ; Rolling Stock, 8 ; Stations and Terminals, 5 ; Signals, 6 ; Tramways, 8.....	101 =	12.69
<i>Building Materials :</i>		
Iron and Steel, 22 ; Cement, 22 ; Stone, 8 ; Masonry, 6 ; Concrete, 4 ; Brick, 4 ; Strength of Materials, 18.....	84 =	10.49
<i>Mechanical Engineering :</i>		
General, 30 ; Pumps, 2 ; Boilers, 12 ; Steam Vessels, 4.....	48 =	5.99
<i>Foundations :</i>		
General and Descriptive, 21 ; Borings, 2 ; Piles, 7.....	30 =	3.74
<i>Structural Engineering :</i>		
Buildings, 6 ; Beams, 6 ; Columns, 12 ; Floors, 4.....	28 =	3.49
<i>Surveys and Surveying.....</i>	23 =	2.87
<i>Sewers, Sewerage, Drainage.....</i>	22 =	2.75
<i>Tunnels.....</i>	18 =	2.24
<i>Transportation.....</i>	18 =	2.24
<i>Electrical Engineering.....</i>	11 =	1.37
<i>Meteorological.....</i>	11 =	1.37
<i>Docks and Dock Building.....</i>	10 =	1.25
<i>Dredging and Excavation.....</i>	10 =	1.25
<i>Municipal Engineering.....</i>	9 =	1.12
<i>Dikes and Levees.....</i>	8 =	0.99
<i>Timber Preservation.....</i>	8 =	0.99
<i>Explosives and Blasting.....</i>	7 =	0.87
<i>Coal, Coke, Mining and Quarrying.....</i>	5 =	0.62
<i>Asphalt and Asphaltum.....</i>	4 =	0.50
<i>Light Houses.....</i>	3 =	0.37
<i>Ordnance and Fortification.....</i>	2 =	0.24
<i>General and Unclassified.....</i>	35 =	4.36
	801 =	100.00

Much work has also been accomplished by committees specially constituted to report on engineering subjects. The first of these was that on tests of American iron and ***Committee on Tests of Iron and Steel.*** steel, which was appointed as early as June, 1872, for the purpose of securing the inauguration of scientific examinations of these materials by a Government commission. At the outset, this Committee was successful in securing congressional action and the appointment by the President of a board, consisting of two army and two navy officers and three experts from civil life, the latter all members of this Society, together with an appropriation for the building of a large testing machine. Pending the construction of this machine, a large amount of material on the subject was gathered, but in 1878 hostile legislation ended the existence of this Board just as its work was fairly begun, and in 1879 the completed testing machine, erected at the Watertown Arsenal, was turned over to the United States Ordnance Department. While many efforts were made subsequently by the Society to secure systematic tests of materials on this machine, it was found that the appropriation made by the Government for preserv-





GEORGE SEARS GREENE, JR.

ing, using and operating it was not more than sufficient to meet the requirements for the work of the Ordnance Department, notwithstanding that in 1881 a clause in the bill appropriating \$10,000 for that purpose instructed the Chief of Ordnance to "give attention to such programme of tests as may be submitted by the American Society of Civil Engineers," and to furnish the Society records of such tests, to be published by it without expense to the Government.

The work accomplished by the Committee on Uniform Standard Time, first appointed in 1881, has been made familiar to all members in recent publications, and it is only necessary here to call attention to the fact that through this Committee the Society was instrumental in securing the adoption of a prime meridian as a zero for computing longitude and reckoning time throughout the globe by intervals of one hour.

The reports of the Committees on "Railway Signals," made in 1875; on the "Cost and Work of Pumping Engines," made in 1875; on the "Means of Averting Bridge Accidents," made in 1875; on "Preservation of Timber," made in 1882 and 1885; on a "Uniform System for Tests

**Committee on
Uniform
Standard
Time.**

**Other
Special
Committees.**

of Cement," made in 1884; on the "Compressive Strength of Cements and Cement Mortars," made in 1888 ; of two Committees on "Standard Rail Sections," the first reporting in 1875 and the second in 1893," and on "Uniform Methods of Testing Materials," made in 1895, represent a vast amount of work undertaken and carried out in a strictly professional manner, the general advantage of which to the profession at large can neither be exactly stated nor overestimated.



JOHN THOMSON.

**COMPARATIVE GROWTH OF NATIONAL
ENGINEERING SOCIETIES.**

For a comprehensive statement of the history of Civil Engineering the reader is referred to the address delivered by Past-President Julius W. Adams,* and for the proper relations of national and local engineering societies to the profession and to each other to that of Past-President George S. Morison,† but it may not be out of place to submit a brief sketch of two other great engineering societies. This is not for the purpose of instituting a direct comparison with our own, because conditions in England, France and America are not only somewhat diverse at the present time, but were still more radically different at the date of the founding of each of the older associations, but in the belief that a study of their early feebleness and subsequent wonderful growth coupled with the well-known position which they have attained as factors in the advancement of the professional standard and in the civilization of the world, may lead to the formation of a just estimate of what it is possible for our organization to accomplish in the future.

* *Proceedings*, Vol. i, p. 18.

† *Transactions*, Vol. xxxiii, p. 467.

* "Toward the end of the year 1817, six young men, then beginning their engineering life, impressed with the difficulties of ***Sketch of the Institution of Civil Engineers.*** gaining the knowledge necessary for the diversified practice of engineering, resolved to form a society for promoting regular intercourse between persons engaged in the profession to the end that such persons might mutually benefit by the interchange of individual observation and experience.

"The first formal meeting was held at the Kendal Coffee House, in Fleet Street, on the 2d January, 1818. The proposal was favorably received; the Society was established; other engineers joined, and rules were framed for its government. During two years it continued to meet, and the result of its experience of the value of the meetings was such as to warrant an effort being made to extend the limits of the Society. It was perceived that a principal step towards this extension would be to obtain the direct patronage of some eminent and popular professional man. Accordingly, on the 23d of January, 1820, the following resolution was passed:

"That, in order to give effect to the principle of the Institution and to render its advantage more general, both to members and the country

* *Minutes of Proceedings*, Inst. C. E., Vol. lxxxvi, p. 153.

at large, it is expedient to extend its provisions by the election of a President whose extensive practice as a civil engineer has gained him the first-rate celebrity, * * * and that a respectful communication be made to Thomas Telford, Esq., Civil Engineer, requesting him to patronize this Institution by taking upon himself the office of President.'

"So little was the Society known up to this time, that Telford had never heard of it when the foregoing resolution was announced to him ; but, appreciating with characteristic judgment the value of such an institution, and the useful results it was capable of yielding, he accepted the proffered chair without hesitation, and was formally installed on the 21st of March following.

"Telford's name gave an impulse to the progress of the Society, which grew rapidly in importance under his fostering care until, on the 3d of June, 1828, it received a Charter of Incorporation, under the Great Seal, by the title of The Institution of Civil Engineers."

The first volume of *Transactions* was published in 1836. The object for which the association was formed was declared to be "for facilitating the acquirement of professional knowledge, and for promoting mechanical philosophy"; and the membership consisted of Members, persons engaged in the practice of

civil engineering ; Associates, whose pursuits constituted branches of engineering, but who were not considered as engineers by profession, and Honorary Members.

Rooms at No. 15, Buckingham Street, Adelphi, were first occupied, and in 1834 a small house in Cannon Row, Westminster, was taken, but the increasing membership soon rendered this too small, and an effort to obtain from the Government apartments in Somerset House failing, a house in Great George Street was secured and taken possession of on Christmas, 1838, a meeting-room 30 feet square having been added. Enlargements were made in 1846 and also in 1868, and a new building erected on the same site was completed in the fall of 1896.

In 1846 the class of "Graduates" was virtually abandoned, and in 1867 a new class, "Students," formed, the members of which, though attached to the Institution, have no corporate rights, and are elected by and remain Students during the pleasure of the Council. In 1879 a class of Associate Members with corporate rights was instituted, and more than half the present membership is in this grade. The total membership March 31st, 1896, was 6,907. One hundred and twenty-six volumes of *Minutes of*

Proceedings have been published to date, four large volumes having been issued during each of the past twenty-two years.

The project for the formation of the Société des Ingénieurs Civils was first started on March 4th, 1848. It was the result of the question which presented itself to the students of the École Centrale as to what would become of that

***Société des
Ingénieurs
Civils de
France.***

school, and of the profession, in the new social organization resulting from the Revolution of February, 1848. The first meeting was held in the Auditorium of the École Centrale, and it was decided that engineers who were not graduates of the school should be admitted, but it was deemed advisable to limit the membership to engineers who were not in the service of the Government. The organization was first named "Société Centrale des Ingénieurs Civils," but in 1850 the word "Centrale" was omitted. For some time meetings were held at different places in succession, but, as is stated in the account from which this sketch is principally derived,* the Society could not continue to be nomadic, its archives disseminated at several places at the homes of various members.

* Notice sur la Société des Ingénieurs Civils de France, par M. A. G. Benoit-Duportail, *Annuaire de la Société*, etc., 1896, p. 7.

No. 20 Rue Bergère was the first home of the Society, but after eighteen months more room was required, and the resources being sufficient, No. 26 Rue de Buffault was rented and occupied for more than twenty-two years. On June 7th, 1872, the Society moved into a house built expressly for it at Cité Rougemont No. 10, which it occupied until December, 1896, when it moved into a new and commodious building just completed and specially designed for it at 19 Rue Blanche. Its publications began soon after the foundation of the Society; in 1875 were published quarterly; in 1876, bi-monthly, and in 1880 became monthly, the whole series to date covering fifty-four octavo volumes.

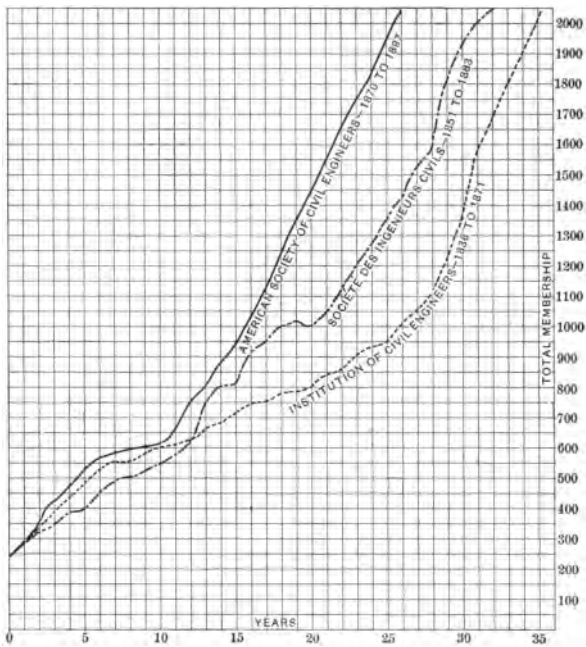
The total membership, November 30th, 1895, was 2,591.

The diagram (page 91) shows graphically the growth of three national associations of civil engineers, the curves starting when the membership of each was about equal, and ending when it reached two thousand. The dates are as follows :

	Date.	Total Membership.
Institution of Civil Engineers.....	1836	238
Société des Ingénieurs Civils.....	1851	242
American Society of Civil Engineers	1870	243

DIAGRAM

SHOWING THE GROWTH OF THE MEMBERSHIP OF THREE NATIONAL ENGINEERING SOCIETIES.



NOTE.—THE AGE OF THE BRITISH INSTITUTE AT THE BEGINNING OF THE CURVE WAS 18 YEARS; OF THE FRENCH SOCIETY, 3 YEARS ; AND OF THE AMERICAN, 18 YEARS.

While, as before stated, the conditions of this formation period of these associations are not comparable, it is satisfactory to know that the period required to reach our present membership by each of our elders was respectively nine and one-half and six years longer than it has been in our case.

CONCLUSION.

In conclusion, it may be affirmed that the American Society of Civil Engineers has reached a point in its history where there can be no uncertainty as to its stability and future usefulness.

The Constitution, as it now stands, and its interpretation by the Board of Direction, assures the maintenance of that prime requisite of success in a national technical society, a high professional standard of membership. The arrangement of its publications is such as to leave to each individual the choice of the part to be taken by him in the dissemination of professional knowledge, and its general meetings held semi-annually, as well as those held

semi-monthly, are largely attended, and tend to promote close social and professional relations between its members.

It would appear, therefore, that the organization is now in a position to carry out, perhaps to an extent not fully foreseen at that day, the objects of its founders, stated in 1852 to be "the professional improvement of its members, the encouragement of social intercourse between men of practical science, and the advancement of engineering in its several branches."

INDEX.

INDEX.

Abert, John James.....	26	Chesbrough, J. C.....	26
Accidents, Means of Averting		Chester, Stephen.....	27
Bridge, Committee on.....	83	Civil Engineers' Insurance	
Accumulation of Society Funds,		League proposed.....	50
1867.....	37, 39	Collations	51
Adams, Julius W.....	16, 18, 26,	Collingwood Prize.....	57
	33, 34, 85	Committee	
Address		Of Seventeen to form a so-	
To the Engineering Profes-		ciety, 1839.....	10
sion in America, 1839....	11	On Centennial Exposition,..	62
To Proposed Charter Mem-		On Compressive Strength of	
bers, 1852.....	19	Cements and Mortars....	84
Admission of local societies as		On Cost and Work of Pump-	
branches discussed.....	74-76	ing Engines.....	83
American Society of Civil En-		On Means of Averting Bridge	
gineers and Architects		Accidents.....	83
formed	16	On Nominations, first.....	74
Annual meetings		On Preservation of Timber..	83
First	37	On Railway Signals.....	83
Date of— changed.....	74	On Society Rooms in 1855..	30
Ayres, J. W.....	16	On Standard Rail Sections..	84
		On Tests of Iron and Steel..	82
Bache, Alexander Dallas.....	26	On Uniform Methods of	
Badge, Society.....	71	Testing Materials.....	84
Barnes, James.....	26	On Uniform Standard Time..	83
Berthoud, E. L.....	26	To Prepare a Plan for Re-	
Blue List adopted.....	47	vival of Meetings in 1867,	
Board of Direction increased....	76	with report.....	33, 34
Brown, Robert N.....	26	Constitution	
Building Funds.....	56, 58	Adopted, 1852.....	17
Bulletin, semi-monthly.....	69	Amendments of—	73, 78
Burden, Henry.....	26	Changes in— in 1872-74....	73
		Codification of— 1889.....	76
Campbell, Wm. S.....	10	Early changes in.....	43
Cements, Uniform System for		Extract from.....	20
Tests of—Committee on....	83	New— adopted.....	76
Centennial Commission.....	62	Proposed— 1839.....	13
Charter Members.....	26	Provisions of new.....	77

Convention.

Convention, Annual.. 45, 46, 48, 49
 Copeland, Charles W. ..18, 27, 33
 Craven, Alfred W.....16, 18, 27
 Crozet, Claude..... 10

Davidson, Matthias Oliver..... 27
 Dexter, George M..... 27
 Diploma of Honor awarded by
 Paris Exposition, 1878..... 63
 Directors18, 76
 Dues

Of members.....18, 23, 27 48
 Compounding..... 75

Emmet, Thomas A.....16, 27
 End of first period of activity... 32
 Engineering Congress..... 64
 Engineering Societies, Growth of 85

Exhibitions
 Columbian Exposition, 1893. 64
 Exhibit at Centennial Expo-
 sition..... 62
 International..... 62
 Paris, 1878..... 63

Fairfax, Wm. C..... 10
 Fellowship Fund.....44, 73
 First Annual Report..... 25

First formal paper presented.... 30
 First meeting of Society..... 16
 First movement to form a national
 society 9

First officers elected..... 18
 First professional discussion.... 24

Fisk, C. B.....10
 Ford, James K.....27, 33

Francis, James Bicheno..... 27
 French, Edmund..... 27

Funds of the Society— Accumula-
 tion of.....37, 39

Gardiner, Edward.....16, 18, 27
 Gardner, Henry A..... 27
 Gay, Edward F..... 10
 Gorsuch, Robert B....16, 18, 23, 27

Grassau.

Grassau, H..... 27
 Greene, George Sears.....16, 27
 Gwynn, Walter..... 10

Hampson, John..... 28
 Harris, Daniel L..... 27
 Higginson, Waldo..... 27
 Hoffman, George E..... 27
 Houston, J. F..... 9
 How, James..... 34
 Hunt, Josiah..... 27

Inches, M. B..... 27
 Incorporation of the Society.... 43
 Independent societies suggested. 14
 Institution of Civil Engineers... 86
 Insurance League proposed..... 50
 International Exhibitions
 Centennial..... 62
 Paris 63
 Chicago..... 64

Jervis, J. B..... 10
 Judah, Theodore D..... 26

Kennedy, Archibald W..... 26
 Kirkwood, James P.....16, 18, 26
 Knight, Jonathan..... 10

Latrobe, Benjamin H.....9, 10
 Laurie, James..16, 18, 24, 26, 33, 38
 Letter ballot introduced..... 73
 Lewis, Isaiah William Penn..... 26

Library
 Joint Engineering — sug-
 gested..... 61
 Of the Society open in the
 evening 54
 Of the Society, number of
 books in..... 61

Locations of Society
 In Croton Aqueduct De-
 partment.....16, 30
 Report on securing new..30, 52
 On William Street recom-
 mended 36

Index.

V

Locations.

Rooms at Broadway and 23d	
Street rented.....	53
House at No. 104 East 20th	
Street rented.....	55
House at No. 127 East 23d	
Street bought.....	56
House at No. 127 East 23d	
Street enlarged.....	58
First movement toward per-	
manent.....	59
Purchase of site in 57th	
Street.....	59
Work on new house to date.	60
McAlpine, William Jarvis.	27, 33, 34
McNeil, W. G.....	10
McRae, John.....	27
Mahan, Dennis H.....	26
Materials, Uniform Methods of	
Testing, Committee on.....	84
Meeting of Engineers in Balti-	
more, 1839.....	9
At Franklin Institute, 1839..	12
In New York, 1852.....	16
Meeting for reorganization of the	
Society, 1867.....	33
Meetings of the Society	
First annual meeting.....	37
Evening—established.....	49
Date of annual—changed... 74	
In 1853.....	24
In 1854.....	28
Recent.....	59
Semi-monthly.....	40
Members	
List of charter.....	26
Number of— in 1854.....	27
Qualification for.....17, 44, 77	
Resident and non-resident..	50
Membership	
Table of increase in.....	79
Comparative growth of— in	
engineering societies.....85-91	
Meyer, Thomas C.....	27
Miller, Edward.....10, 13	

Miller.

Miller, J. F.....	27
Mitchel, D., Jr.....	27
Montgomery, James E.....	27
Morell, Wm. H.....16, 18, 27	
Morison, George S.....	85
Morris, William W.....	27
Morse, James Otis.....27, 29, 33, 34	
Name— Change of Society's....	43
New Society House (see Loca-	
tion of the Society).	
Nominating Committee, First...	74
Norman Medal established.....	49
O'Sullivan, Thomas S.....	27
Paine, Charles—Letter from....	41
Papers	
Advance publication of.....	66
Classification of published..	80
First formal paper presented	30
Picket, William D.....	27
Post, S. S.....16, 27	
President, First.....	18
Publication	
Classification of subjects... 80	
First— issued.....	40
Monthly issue of.....	66
Present System of.....	69
"Pumping Engines, Cost and	
Work of"—Committee on.. 83	
Rail Sections, Standard, Com-	
mittee on.....	84
Railway Signals, Committee on.	83
"Relief of Broadway" read and	
discussed.....	24
Reorganization of the Society,	
October 2, 1867.....	33
Reports	
On reorganization, 1867....	34
Of special committees...83, 84	
Requirements for membership..	
17, 44, 77	
Resolution of thanks to James	
Laurie.....	38

Robinson.

Robinson, Moncure.....	11, 26
Roebling, John Augustus.....	27
Rowland Prize established.....	57

Secretary

Made a salaried officer....	49
Elected by majority of	
Board of Direction.....	78
Sidell, Wm. H.....	16, 18, 27
Smith, Israel, Jr.....	27
Société des Ingénieurs Civile de	
France—Sketch of.....	89
Societies, Local.....	14, 74
Society Rooms (see Location of	
the Society),	
Standard Time, Committee on...	83
Students, Admission of—dis-	
cussed.....	75
Subjects discussed at meetings in	
1855.....	29
Summer recess inaugurated.....	47
Swift, McRee.....	27, 34

Talcott.

Talcott, W. H.....	16, 27, 30, 33, 34
Tests of Iron and Steel	
Committee—work of.....	82
Thomson, J. Edgar.....	11
Timber, Preservation of, Com-	
mittee on.....	83
Totten, Joseph G.....	26
Transactions	
First issued.....	68
Number of volumes issued.	68
Vice-Presidents	
First.....	18
Number increased.....	76
Wallace, William.....	27
Welch, Sylvester.....	11
Whistler, G. W.....	11
Winslow, John F.....	27
Work done in 1854.....	27
Wright, Benjamin.....	10



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